

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA

AT HUNTINGTON

OHIO VALLEY ENVIRONMENTAL  
COALITION, INC., and WEST  
VIRGINIA HIGHLANDS  
CONSERVANCY, INC.,

Plaintiffs,

v.

APOGEE COAL COMPANY, LLC, and  
HOBET MINING, LLC,

Defendants.

CIVIL ACTION NOS. 3:07-00413,  
3:08-00088,  
3:09-01167

Huntington, West Virginia  
August 10, 2010

TRANSCRIPT OF BENCH TRIAL - DAY 2  
BEFORE THE HONORABLE ROBERT C. CHAMBERS  
UNITED STATES DISTRICT JUDGE

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Proceedings recorded by mechanical stenography; transcript  
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## I N D E X

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JOHN MCHALE (resumed)		151	191	--
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1 Tuesday, August 10, 2010, at 9:05 a.m. in open court

2 THE COURT: All right. Are we ready to resume?

3 MR. HURNEY: Yes, Your Honor.

4 THE COURT: Mr. McHale, if you'd come back to the  
5 stand.

6 MR. HURNEY: May I begin, Your Honor?

7 THE COURT: You may.

8 BY MR. HURNEY:

9 Q. Good morning, Mr. McHale.

10 A. Good morning.

11 Q. I'd like to start off this morning and establish some  
12 time frames with reference to some of the things that we  
13 discussed yesterday.

14 A. Okay.

15 Q. I'm going to direct your attention to the time period  
16 immediately after the hearing in this court on July 8, 2008.  
17 Do you recall when you first hired what was then MATRIC? And  
18 tell me the date.

19 A. When I hired them or first spoke with them?

20 Q. When you first spoke with them.

21 A. We first spoke with them the Wednesday after the hearing.  
22 That date would have been sometime around the 9th, I think.

23 Q. Okay. Yesterday -- I'm not going to go back over your  
24 testimony. Yesterday you talked about a number of things you  
25 did with MATRIC. When -- when -- and you see how -- I'm going

McHale - Cross

1 to write this on a timeline, all right? You see I've kind of  
2 got 2008, 2009, 2010. I want to help you establish a time-  
3 line so that the Court will understand what you did and when  
4 you did it.

5 When did you actually retain MATRIC?

6 A. We retained MATRIC later that week after we took them to  
7 visit several sites.

8 Q. Okay. I believe yesterday you testified that at some  
9 point you tasked them with -- well, I don't want to lead you.

10 At some point after the hearing did you have a June 30,  
11 2009 deadline?

12 A. Yes.

13 Q. All right. From this Court?

14 A. Yes.

15 Q. Okay. Did you task MATRIC to do anything with respect to  
16 compliance by that deadline?

17 A. Initially our first -- the first task we gave them was  
18 in -- if I remember, we asked for a proposal, which they gave  
19 us on July 22nd, to evaluate potential selenium-removal  
20 technologies.

21 Q. All right. What was next?

22 A. And, you know, they proceeded to do that. The June 30th  
23 deadline came about later.

24 Q. Okay.

25 A. We were not aware of the June 30th deadline yet. We knew

McHale - Cross

1 a deadline was coming, but we didn't know what it was.

2 Q. All right. At some time, though, did you become aware of  
3 the deadline?

4 A. Yes.

5 Q. Did you ask MATRIC to do anything with respect to the  
6 deadline?

7 A. At that point in time we asked them to continue with what  
8 we had originally tasked them to do. I told -- you know, I  
9 informed them that we had been issued a deadline for the court  
10 order, through the court order, and they were aware of that.

11 Q. Did you hire them to construct anything?

12 A. Not at that time. Well, we did later.

13 Q. Okay. Well, I'm not doing a very good job of this. I  
14 want you to walk me to -- through what you did with MATRIC.  
15 I'm not -- you're talking about this week. I want you to keep  
16 going forward with MATRIC.

17 At some time did you retain MATRIC to construct  
18 something?

19 A. Yes. MATRIC continued on with, you know, their  
20 evaluation in the July, August, September, and October time  
21 frame. And during that period, what they proposed as a  
22 solution was their ZVI foam.

23 Q. All right. And what did you ask them to do?

24 A. In November, you know, I tasked them with designing a ZVI  
25 foam system to treat the average flows from Mud Lick and Slab

McHale - Cross

1 Fork at Apogee --

2 Q. Okay.

3 A. -- and to have that -- and to construct and install by  
4 the June 30th deadline.

5 Q. All right. Now, we talked in more detail about that  
6 yesterday.

7 A. Yes.

8 Q. At least up to June 30th, that's what you were -- during  
9 this time period, that's what you were doing with MATRIC?

10 A. That's what we were doing with MATRIC.

11 Q. And as I recall, it was the ZVI foam initial -- it was  
12 the initial design that was going to go through chutes or --

13 A. It was a horizontal flow that was going to basically pass  
14 through constructed concrete flumes.

15 Q. Okay. Now, you also retained CH2M Hill, correct?

16 A. Yes.

17 Q. Shortly after the hearing?

18 A. Yes.

19 Q. All right.

20 A. Yes, I left a -- I called them on July 9th, left a  
21 message, and Tom Sandy returned my call July 14th.

22 Q. Okay. At some point you retained them, and what did you  
23 ask -- tell me when you retained them and what you asked them  
24 to do.

25 A. Well, let me walk you through the process there. You

McHale - Cross

1 know, after my call with Mr. -- first discussion with  
2 Mr. Sandy, we arranged for a site visit.

3 Q. Okay.

4 A. And that happened on July 23rd and 24th.

5 Q. Okay.

6 A. And Tim Harrison was the person that conducted the site  
7 visit for CH2M Hill and, you know, basically went to the site.  
8 I explained to him our situation and, you know, what we were  
9 going to have to be -- have to do to come into -- what we --  
10 at that time what we knew we had to do to come into compliance  
11 with selenium at that permit. We also took him to our Hobet  
12 property.

13 Q. What did you ask him to do?

14 A. We took him to the Hobet property to basically, you know,  
15 just, you know, let him see the scope of the overall problem  
16 for the company as well as what we just had at Apogee.

17 Q. After the site selection did you ask them to do  
18 something?

19 A. Yeah. After that, we discussed the best approach to move  
20 forward, you know, to select the best technology, and they  
21 proposed a two-phase, you know, two-phase project -- well,  
22 actually three-phase project. But the first phase of it  
23 would've been a, you know, a screening analysis, which was a  
24 relatively short-term project, to identify the available  
25 technologies that they would then subject to a further



McHale - Cross

1 detailed -- more detailed evaluation.

2 Q. Okay. Am I correct that the more detailed evaluation is  
3 the report that was issued in the end of January '09?

4 A. Yes, the one of January 26 was basically Phase II.

5 Q. Okay. That's 1/26. I'll put CH2 report, all right?

6 A. Yeah. Phase I was completed in August, August 6th, with  
7 revision, I think, August 12.

8 Q. All right. Is this timeline making sense?

9 A. Yes.

10 Q. All right. Now, you talked yesterday -- and I want to  
11 fill in some times of things we talked about yesterday, and  
12 then I want to ask some more questions.

13 We talked yesterday about an RO pilot that was performed  
14 by GE. When was that done?

15 A. That was done in January of 2009.

16 Q. Now, when did you first hire GE?

17 A. We first spoke with GE in late July of 2008.

18 Q. All right. GE piloted RO in January. When was the ABMet  
19 pilot done?

20 A. The total project extended, you know, from the February  
21 time frame through May of 2009.

22 Q. So 2 to 5, I'll put ABMet, all right? There's a box for  
23 RO. That RO was pretty short, as I recall?

24 A. Yes.

25 Q. Okay. You also did a -- I think we ended yesterday

McHale - Cross

1 talking a little bit about a VSEP pilot. When was that  
2 performed?

3 A. May through July. We actually, you know, started all the  
4 preparatory work in April.

5 Q. So you prepped for it in April. I'll put 4. And you ran  
6 the pilot. Was there a period of analysis after the pilot?

7 A. Yes.

8 Q. And what did that -- just generally what did that consist  
9 of?

10 A. Basically a project report by New Logic and several back-  
11 and-forth critiques. You know, CH2M Hill would critique that,  
12 and then there was, you know, a response by New Logic to  
13 issues raised by CH2M Hill.

14 Also, there was a subsequent evaluation of waste disposal  
15 technologies, evaporator crystallizer that was performed by  
16 CH2M Hill.

17 Q. To take care of the concentrate?

18 A. That's right.

19 Q. All right. When did that analysis or that post --

20 A. It all extended out through the end of the year --

21 Q. Okay.

22 A. -- actually till -- the final was in early January --

23 Q. So we overlap.

24 A. -- if I remember correctly.

25 Q. All right. Now, I think we started -- excuse me --

McHale - Cross

1 started yesterday to talk about the FBR. First of all, just  
2 for the record, what does "FBR" stand for?

3 A. Fluidized bed reactor.

4 Q. What kind of system is that?

5 A. It is a biological treatment system for removal of, in  
6 this case, selenium.

7 Q. Am I correct that FBR and ABMet are both biologic  
8 systems?

9 A. Yes, they are.

10 Q. I think you talked a little bit yesterday about the  
11 differences, but was FBR piloted?

12 A. Yes, it was.

13 Q. Who piloted the FBR?

14 A. CH2M Hill.

15 Q. And whose technology was the FBR? Whose gizmo was it?

16 A. The reactor itself is marketed by EnviroGen.

17 Q. When did that pilot take place?

18 A. That took place, preparatory work, in February. It took  
19 place really March through the May time period in 2010.

20 Q. Okay. I'm going to run out of room here. Let me adjust  
21 this. So you start with FBR in February and extends through  
22 May?

23 A. Yeah, that's --

24 Q. Now, did you get an FBR report, final report on that?

25 A. Yes, we did.

McHale - Cross

1 Q. When did you get that?

2 A. The final report in July 22nd, this year.

3 Q. All right. Now, during the time of these pilots, you're  
4 aware that the deadline for compliance had been extended?

5 A. Yes.

6 Q. When did you learn that?

7 A. Basically that occurred with our March 19, 2009 consent  
8 decree.

9 Q. Okay. And what was that deadline?

10 A. To April 5th of 2010.

11 Q. At some point in here did you realize that you were not  
12 going to be able to comply?

13 A. Yes.

14 Q. Okay. We filed a motion for an extension.

15 A. That's correct.

16 Q. You understand that this hearing is about our motion for  
17 additional time before this judge.

18 A. Yes, I do.

19 Q. All right. Let's try to fill in some other things.

20 These are the things we talked about yesterday. What -- talk  
21 to me a little bit about what is going on -- I don't want --  
22 we talked at some length about ZVI, all right? I just want to  
23 fill in here. And if you want to start back and we can work  
24 either way, but let's start now.

25 What is the current status of the ZVI projects you have

McHale - Cross

1 in place at Apogee?

2 A. We have three installations in place -- well, three  
3 installations at this permit at Apogee.

4 Q. Okay. Starting with Slab Fork, which is the largest  
5 outlet, what is installed there?

6 A. That is a GMT ZVI treatment system.

7 Q. When was that installed?

8 A. February of this year.

9 Q. All right. What is installed -- and does that continue  
10 to operate --

11 A. Yes, it does.

12 Q. -- now? And what is installed at Mud Lick?

13 THE COURT: Before you get off of that, could you  
14 give me a little more description of what is installed at  
15 Slab Fork and what its capacity is, how it's functioning?

16 MR. HURNEY: Your Honor, would you like me to ask  
17 those questions?

18 THE COURT: That would be fine.

19 BY MR. HURNEY:

20 Q. Mr. McHale, you heard the judge. Can you describe for  
21 the Court the system, the GMT system that is currently  
22 installed at Slab Fork?

23 A. Yes. It is a six-tank system with the steel wool  
24 inserts.

25 Q. All right. Water runs through this system, correct?

McHale - Cross

1 A. Yes, it does.

2 Q. Would you describe for the judge how the water gets  
3 from -- gets into the system and where it goes.

4 A. Well, basically we've diverted a partial flow of the  
5 drainage through the system, and then it goes back into the  
6 pond prior to discharging from the outlet.

7 Q. So you've run a pipe up into one pond?

8 A. We've diverted the flow in -- basically in the drainage,  
9 you know, pump it up into the system and let it discharge back  
10 into the lowermost pond.

11 Q. How many gallons per minute is that?

12 A. It would be in the neighborhood of 24 to 26 gallons per  
13 minute.

14 Q. That's -- that's a -- just to be clear, that's not  
15 treating the total flow.

16 A. No, it's partial flow.

17 Q. Partial base flow. So you're not representing to the  
18 Court that you're trying to treat the whole thing.

19 A. No, we're not treating the entire flow anywhere.

20 Q. Tell the Court why you installed a six-tank system that  
21 would only treat 24 gallons.

22 A. To -- it is a base system that is capable of being  
23 expanded. We have installed -- we've proceeded with these  
24 installations there and at other locations on the principle  
25 that, you know, as we get performance, as we judge success, we

McHale - Cross

1 can augment these systems to the point where -- to such point  
2 as we can be in compliance.

3 Since the systems to date have not been able to treat to  
4 compliant levels a hundred percent of the time, we think it is  
5 a logical step to put in a small -- you know, a system that is  
6 capable of expansion and only expand it when it's warranted.

7 Q. At this point you've not expanded Slab Fork?

8 A. No. It was just put in in February.

9 Q. And as you sit here today, do you anticipate that  
10 Slab Fork -- that ultimately that the GMT system will be the  
11 one that works at Slab Fork?

12 A. We're hopeful that the improvements that are continually  
13 being made will at some point, you know, allow us to, with  
14 some confidence, expand the system.

15 Q. And is that using -- you talked yesterday about different  
16 technologies that GMT is employing. Which technology are they  
17 employing at Slab Fork?

18 A. The GMT is the -- at Slab Fork is the, like I said, the  
19 steel wool system. It is not the new reel system which has  
20 just been -- you know, which was really deployed after that.

21 Q. When did you initially deploy -- Your Honor, do you need  
22 any more detail?

23 THE COURT: That's fine.

24 BY MR. HURNEY:

25 Q. When did you initially deploy ZVI at Titanic?

McHale - Cross

1 A. Titanic, in the August, September 2008 time frame.

2 Q. And that's been running in some configuration since then?

3 A. Yes.

4 Q. All right. And what is the current configuration of ZVI  
5 at Titanic?

6 A. That is a 15-tank system.

7 Q. What kind of -- what are they using for the media?

8 A. They were initially using the older configuration of the  
9 media. We have recently installed, just in the last few  
10 months, the reel design in several of the tanks.

11 Q. Was that installed at the recommendation of GMT?

12 A. Yes, it was.

13 Q. Okay. Talk to me about Mud Lick. What is installed at  
14 Mud Lick?

15 A. Mud Lick is a Liberty-style system.

16 Q. And when was that installed?

17 A. In February of this year.

18 THE COURT: And is that the reel system you're  
19 talking about?

20 THE WITNESS: No, this was Liberty/MATRIC ZVI foam  
21 system, Your Honor.

22 THE COURT: Okay.

23 BY MR. HURNEY:

24 Q. All right. I had talked -- I think yesterday we talked  
25 about the fact that at some point Liberty changed its design.



McHale - Cross

1 When did they change their design?

2 A. During the design phase for the large-scale installation  
3 for Mud Lick and Slab Fork and through their -- and while they  
4 were piloting the system at Mud Lick, they started having  
5 problems with basically scaling of the media and, you know,  
6 blinding off of, you know, the flows, you know, basically  
7 being decreased and then stopped relatively quickly. And they  
8 determined that part of the problem was the horizontal -- it  
9 was the configuration itself, horizontal flow, and they  
10 started experimenting with a vertical flow design.

11 Q. And this is Liberty now?

12 A. This is, yes, MATRIC/Liberty.

13 Q. When did they change their design?

14 A. Well, this was a process, you know. They identified the  
15 problem at about the April 2009 time frame, March, April --

16 Q. Okay.

17 A. -- and started working, you know, toward a solution while  
18 we were still designing for the installation of the large-  
19 scale design. And they tried, you know -- they were talking  
20 about several different configurations, how to incorporate it  
21 into the large-scale design and different things. Nothing  
22 seemed to quite work in that. And what they eventually came  
23 up with, in the late May, June time frame, was what they  
24 called the fish tank configuration, which is a -- just simply  
25 a -- I don't know why they call it a fish tank configuration,

McHale - Cross

1 but it is basically a lower profile tank than the GMT style  
2 tanks. And they started working with, you know, trying to  
3 design -- incorporate that kind of a design into a large-scale  
4 system. And what -- in the meantime what they did propose was  
5 we go out and try to pilot that configuration.

6 So we discontinued the earlier pilot with MATRIC and put  
7 in that style of a system at Mud Lick to start seeing what the  
8 results were.

9 Q. Is that the February installation at Mud Lick?

10 A. No, no, no, this was prior to that. We had a continuous  
11 pilot going on at Mud Lick from -- through all of 2009.

12 Q. Okay. So at what point did the pilot change from the  
13 horizontal to what you're calling the fish tank?

14 A. It was -- it was in the May, May to June time frame. I  
15 don't know exactly when we got it put down there.

16 Q. Okay. And then you piloted that?

17 A. Yes.

18 Q. All right. And that is what is currently installed down  
19 here. (Indicating)

20 A. Right.

21 Q. All right. Now, during this time -- and to be clear,  
22 which of these -- you're working at both Hobet and Apogee,  
23 correct?

24 A. Oh, yes.

25 Q. Under orders at both places.

McHale - Cross

1 A. Yes.

2 Q. Okay. Which of these pilots were used as supplemental  
3 environmental projects under the Boone County order?

4 A. The RO project for GE and the ABMet project and the FBR  
5 project.

6 Q. Okay. And the VSEP was under this Court's order?

7 A. Yes, it was.

8 Q. Now, you have been -- you testified yesterday that you  
9 were installing a number of systems at Hobet pursuant to the  
10 Boone County decree. When did you start those installations?

11 A. We started those installations in 2008.

12 Q. All right. Can you give me a time frame for it?

13 A. Well, we had installation -- we had an installation in  
14 2008 prior to the consent order --

15 Q. Okay.

16 A. -- and then immediately following the consent order, we  
17 started installing additional systems.

18 Q. So if I could, Hobet, ZVI, and bring it up to the  
19 present, would that be accurate?

20 A. Yes.

21 Q. And how many systems have you installed to date?

22 A. At Hobet?

23 Q. Yeah.

24 A. We have a total corporate-wide of 32. At Hobet would be  
25 probably 25, 26 of those.

McHale - Cross

1 Q. You're installing them elsewhere as well?

2 A. Oh, yes. Yeah, we're installing them everywhere that we  
3 have identified a selenium treatment requirement.

4 Q. Now, why didn't you do the FBR back here? (Indicating)  
5 Why didn't you do it faster?

6 A. We were already involved in several efforts there, and we  
7 had a lot of things going on, and we, you know, we had had  
8 that hope at the time that one of those pilots would pan out  
9 for us.

10 Q. What is your understanding of whether the VSEP pilot  
11 turned out to be judged an effective technology for use in  
12 this circumstance?

13 A. The VSEP pilot, in our judgment, it failed to prove the  
14 technology for removal of selenium on a consistent basis and,  
15 you know, was not a technology we chose to move forward with.

16 Q. Did you get a recommendation on that from CH2M Hill? Did  
17 you get a report?

18 A. We got a report from CH2M Hill.

19 Q. Now, I want to talk about what is the process -- you  
20 know, you testified that you got a report on July 22nd from  
21 CH2M Hill as it relates to the FBR project; is that correct?

22 A. That's correct.

23 Q. Do you have that in front of you? Has that been handed  
24 to you?

25 May I, Your Honor?

McHale - Cross

1 THE COURT: You may.

2 THE WITNESS: I have it somewhere. Here it is.

3 BY MR. HURNEY:

4 Q. You've got it?

5 A. Yes.

6 Q. Okay. Let me -- look at Plaintiff's Exhibit 46. Can you  
7 identify that exhibit?

8 A. Yes. It's the fluidized bed reactor pilot study.

9 Q. And does that contain CH2M Hill's -- the results of the  
10 study?

11 A. Yes, it does.

12 Q. What does CH2 -- what has CH2M Hill recommended as the  
13 next step towards the installation of this system or towards  
14 the evaluation of the system?

15 A. Excuse me a minute while I find the reference to the  
16 recommendations page.

17 They made a determination that FBR could be, in their  
18 opinion, could be designed to provide an appropriate full-  
19 scale design for treatment of selenium, and they recommended a  
20 number of things that still needed to be clarified or  
21 determined, you know, prior to proceeding on that.

22 Q. Let me ask you a question. You testified that the FBR  
23 went from February to May of this year. Do you -- did you --  
24 was there a -- is there a -- on what date did you direct CH2M  
25 Hill to plan up and proceed with that pilot?

McHale - Cross

1 A. It was -- it was in 2009.

2 Q. When?

3 A. We started that process in the August time frame.

4 Q. And what did you do -- what did you start doing in August  
5 as it relates to the FBR pilot?

6 A. We -- well, we had tasked CH2M Hill with coming up with  
7 estimates of the scope and cost for several pilot -- several  
8 supplemental environmental projects we were proposing as part  
9 of the Hobet consent order, and that was one of them.

10 Q. What is CH -- what projects do you have ongoing on an  
11 active basis right now at either Apogee or Hobet?

12 A. With CH2M Hill?

13 Q. Yeah, start with CH2M Hill.

14 A. CH2M Hill is doing a watershed or basically a storm water  
15 evaluation --

16 Q. Okay.

17 A. -- in order to determine, you know, the effects of storm  
18 water on selenium concentrations at our outlets at Hobet.

19 Q. When did that -- when did that start?

20 A. That started early this year. I think that started in --  
21 actually started preparation for that in January.

22 Q. Okay. When do -- do they have people -- you said storm  
23 water. Are they going out and measuring water?

24 A. They're putting monitoring devices at several outlets,  
25 and they are basically measuring flows and other, you know --

McHale - Cross

1 and the chemical analyses of the water at low flow, storm  
2 flows, you know, various precipitation events.

3 Q. Looks to me like all of these take some amount of  
4 planning before they start. When did they actually get boots  
5 on the ground on this project?

6 A. This is -- they started actual measurement in April.  
7 Construction started for the weirs and things like that  
8 started earlier than that.

9 Q. So that's the storm water?

10 A. Yeah.

11 Q. All right. What else? Are they doing anything else at  
12 Apogee?

13 A. Well, currently, like I said, we've tasked them with  
14 firming up a cost estimate for the treatment proposals we  
15 discussed based on this and what discussions last week and  
16 also a proposal for construction.

17 Q. The discussions last week came during a day-long meeting?

18 A. Yes, two days, basically, yeah, that I was involved.

19 Q. Were the plaintiffs present for many of those  
20 discussions?

21 A. Yes, they were.

22 Q. Was the plaintiff's expert witness present for any of  
23 those discussions?

24 A. Yes.

25 Q. Information shared back and forth?

McHale - Cross

1 A. Yes.

2 Q. Now, do you have any other ongoing projects at either  
3 Apogee or Hobet right now other than what we've discussed?

4 A. We have ongoing research projects by West Virginia  
5 University and also one of our consulting firms.

6 Q. Okay. What projects are ongoing?

7 A. The West Virginia University is conducting projects.  
8 Basically one of the supplemental environmental projects for  
9 the Hobet consent order was a watershed base study -- or  
10 watershed study for the Mud River Basin to determine selenium  
11 loading and sources, where the selenium influences in the  
12 basin are coming from.

13 Q. Okay. And is that ongoing now?

14 A. That's ongoing.

15 Q. And when did that start?

16 A. That started in the second half of 2008.

17 Q. Somewhere in there. (Indicating) Okay. Let me ask you  
18 a question. What is a material -- what's a material handling  
19 plan?

20 A. A material handling plan, as it's applied in our permits,  
21 is a plan to segregate potentially toxic-forming materials,  
22 depending on the -- what you're concerned about, whether it's  
23 acid mine drainage or selenium, but to segregate the materials  
24 with potential for formation of that type of drainage and to  
25 place and segregate that material away from any drainage paths



McHale - Cross

1 where it could get into the waterways.

2 Q. Now, am I correct, is Apogee -- or is the portion of the  
3 Apogee mine related to the three outlets that we've been  
4 discussing an active mine?

5 A. No, it is not.

6 Q. Okay. Do you have in place material handling plans at  
7 your active mines at Hobet?

8 A. Yes, we do.

9 Q. And what do they -- explain as it relates to selenium  
10 what a material handling plan directs people to do.

11 A. Okay. And this is according to a plan that is in our  
12 approved surface mine permit according to DEP issued  
13 guidelines. The process starts back in the permitting stage  
14 where through our core drilling program we identify any strata  
15 in the geologic column to be mined that has concentrations of  
16 selenium in excess -- at or in excess of 1 part per million.  
17 And at 1 part per million it is assumed to be material that  
18 would leach into the waterways with a potential -- reasonable  
19 potential to discharge selenium in excess of the water quality  
20 standard.

21 Q. Let me ask you a question. How do you find it?

22 A. We drill. We're required as part of our permitting  
23 process to drill quarter holes on rough -- on not to exceed  
24 2500-foot centers through our permit area. And this is for  
25 various geological information.

McHale - Cross

1 Q. How long have you been doing this?

2 A. That's been done for going on decades now.

3 Q. Core drilling has. I'm sorry.

4 A. No, well --

5 Q. How long have you been doing the material handling plan  
6 with regard to segregating rock that may contain selenium?

7 A. For selenium, it's a relatively recent development. The  
8 guidance for DEP came out in, I think, I believe, November of  
9 2008. And since that time, all permits submitted had to have  
10 a selenium material handling -- had to first have that  
11 analysis in there. They had to show if there were any -- we  
12 had to show if there were any concentrations of selenium in  
13 the column that were greater than 1 part per million, and, if  
14 so, we had to submit a selenium material handling plan.

15 Q. Do you have an ongoing analysis of how that's working?

16 A. Yes. Yes, we do. I mean we have our -- I mean we have  
17 our DMRs at the sites where we're conducting the material  
18 handling plan. Now, implementing a material handling plan, we  
19 have, you know, fairly rigorous documentation of which  
20 material went where that is maintained by the engineering  
21 staffs at the mine site.

22 Q. And that's ongoing at active mining since November or so  
23 of '08?

24 A. It's been ongoing since the permits issued subsequent to  
25 that.

McHale - Cross

1 Q. And you got guidance -- did DEP issue a regulation  
2 requiring that?

3 A. It was guidance.

4 Q. "Guidance" meaning?

5 A. Permitting guidance, which they issue all the time.

6 Q. Have they given you any permitting guidance with respect  
7 to best available technology to remove selenium?

8 A. No, they have not.

9 Q. Have they given you permitting guidance with respect to  
10 flows that -- any limitation or any suggestion as to what flow  
11 needs to be treated as it relates to selenium?

12 A. The first indication we got from them informally was last  
13 week when we met with them, but up till that point we had  
14 gotten -- received no guidance.

15 THE COURT: What guidance did they give you last  
16 week?

17 THE WITNESS: Last week they basically said that  
18 they would leave it up to us to determine what flow needed to  
19 be treated, of course, but the bottom line was always  
20 compliance at the outlet and that so, you know, anything we  
21 submitted would have to have a plan to address it in the event  
22 that our constructed plan did not result in compliance, but  
23 they were of the opinion at that point that the base flow or  
24 the dry weather flow would be a reasonable place to start as  
25 of last Thursday.

McHale - Cross

1 BY MR. HURNEY:

2 Q. And the bottom line, we've been talking a lot about  
3 flows. Am I correct that at the point where you discharge  
4 your water, you need to be in compliance?

5 A. Yes, we do.

6 Q. And when we talk about the flow, that's the amount, the  
7 varying amount of water that needs to be treated before you  
8 get to that end point?

9 A. Essentially, yes.

10 Q. And so if you could treat some of it and not treat some  
11 of it, but it blended and you were in compliance at the end of  
12 the -- at the discharge point, would that leave you in  
13 compliance with the state?

14 A. Yes, it would.

15 Q. There was a statement made yesterday that you just  
16 yesterday morning asked CH2M Hill to proceed. You got the  
17 report on 7/22 --

18 A. Yes, I did.

19 Q. -- correct? Did you need -- and, in fact, discussed the  
20 report with the other side, correct?

21 A. Yes.

22 Q. Okay. And need some time to digest it and make a request  
23 to CH2?

24 A. Yes.

25 Q. Did you turn that around pretty quickly?

McHale - Cross

1 A. In this case, I think yes, we did.

2 Q. Mr. McHale, I've tried to graphically show all the  
3 different things that you've done. Why didn't you do all this  
4 stuff faster? I mean you've heard the plaintiffs in this case  
5 say that you should have done everything faster, that you  
6 didn't care about the deadlines and that you were taking your  
7 sweet time. And I want you to tell the Court what kind of  
8 attention did you pay to this and why you think you made your  
9 best effort to meet each deadline, because I think the judge  
10 wants to know that.

11 A. Well, if you look at any given point in time in that two-  
12 year time frame, we were doing quite a lot and we were -- we  
13 were very busy. We, quite frankly, probably would not have  
14 done the VSEP pilot except that was the price of the consent  
15 order as far as from my point of view. We had already  
16 determined we didn't think it was a viable technology, and  
17 that caused us to have a lot of effort during that period that  
18 we could have possibly -- could have moved the FBR pilot up  
19 sooner if we did not have to do that. But at any point, we  
20 were always cognizant of our deadlines and what we had to do  
21 to meet that, and we -- from my point of view, we were not  
22 letting grass grow under our feet. We were working hard on  
23 this.

24 Q. Aside from dealing with all this, what else were you  
25 doing to learn about, investigate, and try to figure out this

McHale - Cross

1 selenium problem? What other things were you doing?

2 A. Well, you know, we're involved, as I think I said  
3 previously, we're involved with the North American Metals  
4 Council, which has a selenium working group with people with  
5 interest in selenium issues from North America and the United  
6 States, and it's very involved and has been for several years  
7 now on mainly the studying of the effects of selenium on  
8 aquatic environments.

9 I first -- I first joined it in late 2007 -- 2008, I'm  
10 sorry, and, you know, introduced them to the situation we have  
11 with the treatment problems for selenium, and that led to some  
12 attention being given to the group toward trying to develop  
13 some research into treatment technologies and things like  
14 that. But what it gave -- one of the things it gives to me is  
15 it gives me a window on what's being done anywhere as relates  
16 to selenium, because people -- members of that group have --  
17 they know what's going on basically worldwide on selenium  
18 issues, with a particular emphasis with what's going on in  
19 North America.

20 Q. From all different --

21 A. All different -- they're from coal mining companies, both  
22 coal and other petroleum companies, consulting firms, you  
23 know, those type of folks.

24 Q. Is Tom Sandy involved in that?

25 A. Yes, he is.

McHale - Cross

1 Q. What are you waiting to get from CH2M Hill?

2 A. The next thing we're waiting for from CH2M Hill is a  
3 firm-up of the estimate of the two different scenarios I  
4 described yesterday that, you know, that led from this report  
5 and the discussions we had last week.

6 Q. As you sit here today, if CH2M Hill comes in with a -- I  
7 think you said yesterday the ballpark figure is around  
8 \$40 million?

9 A. For the one scenario, the centralized system.

10 Q. But in terms of technology as you sit here today, do you,  
11 based on all you've done and all you know, is that a promising  
12 technology for Patriot Coal?

13 A. Yes, we think so.

14 Q. Have you ruled out definitively RO or ABMet?

15 A. I think we've ruled out RO definitively. ABMet, unless  
16 something changes, we've ruled that out.

17 Q. FBR the better system?

18 A. We think FBR is a better system.

19 MR. HURNEY: Your Honor, that's all the questions I  
20 have at this time.

21 BY THE COURT:

22 Q. Well, let me ask a couple of questions perhaps before  
23 counsel finishes. CH2M Hill gave you the evaluation in  
24 January of '09.

25 A. Yes.

McHale - by the Court

1 Q. And from your testimony, I understand that you really  
2 expected their report to guide how you would approach  
3 selecting one or more technologies to test and do the other  
4 things that they recommended to try to find a technology that  
5 would work and could be applied to deal with all the outlets.  
6 Is that a fair statement?

7 A. Yes, it is.

8 Q. Well, it's Joint Exhibit Number 5. Do you have that or  
9 does he have a copy of it up there?

10 A. Yes, sir.

11 Q. Do you have a copy? Turn to the executive summary,  
12 page 3. Are you with me?

13 A. Yes.

14 Q. It lists -- it just states very simply, after evaluating  
15 the treatment alternatives, the company recommends that  
16 Patriot Coal take a variety of steps, and there are --  
17 what? -- seven different steps there. I want to ask in  
18 particular about a couple of them.

19 The second one is initiating discussions with DEP to  
20 negotiate the quantity of water.

21 I assume that's in reference to what you just said you  
22 had a conversation with DEP about just a week ago.

23 A. Yes, sir, and several conversations over the period.

24 Q. Well, I'm curious. They identified this in January of  
25 '09. What steps did you take to try to pin this down starting



McHale - by the Court

1 with their evaluation?

2 A. As far as the discussions with DEP, sir?

3 Q. Exactly.

4 A. As I mentioned, we -- that would be a subject that would  
5 come up in various meetings we've had with them and --

6 Q. Well, you know, let me be blunt about it, Mr. McHale.  
7 I'm confused about this because it's clear that you believe  
8 that that's a fundamental characteristic that has to be  
9 determined before you really can figure out whether any of  
10 these technologies are going to be feasible and such that you  
11 can implement them. And so, frankly, I just don't understand  
12 how it is that when you get this recommendation and you've  
13 stressed in your testimony how important it is to identify the  
14 amount of the flow that you'll be expected to treat, why you  
15 can't offer more than just an occasional informal conversation  
16 with DEP over the course of almost two years now and  
17 culminating in another informal conversation just a week ago.

18 Isn't there something more you could have done to try to  
19 pin this down with DEP?

20 A. In retrospect, Your Honor, I probably should have put a  
21 request in writing to DEP. I did not, but as I said, I did  
22 ask them on several occasions if they were, you know, if they  
23 could provide guidance on that.

24 Q. What were they telling you all this time?

25 A. Basically they didn't come back -- they never came back

McHale - by the Court

1 with a firm answer on that, whether a yes or no. And, you  
2 know, what I took away from it on each occasion was that, you  
3 know, they were looking at it. Like I said, I probably should  
4 have put a formal request in writing, but I did not.

5 Q. Well, I know from the other cases I've had that during  
6 the course of the regulatory process even after permitting,  
7 it's very common for a permittee to make formal requests for  
8 permit modifications or other things.

9 Was there that avenue available to you under your permit,  
10 that you could go back to them, to DEP, and in a sense sort of  
11 force their hand about what quantity they were going to expect  
12 you to be able to treat?

13 A. Yes, Your Honor, and I should probably add a little bit  
14 of context here. As part of the, you know, the compliance  
15 orders that we had with the state separate from these --

16 Q. Right.

17 A. -- we were required to submit permit modifications for  
18 both our surface mine permit and water discharge permits to  
19 the state for these systems that we planned to install, which  
20 we did in a timely manner for all of our permits that we're  
21 required to do that.

22 Q. Did you have to do that for these pilot projects, the  
23 SEPs that were --

24 A. We did not have to do it for the SEPs.

25 Q. Okay.

McHale - by the Court

1 A. But for the compliance orders, you know, the state  
2 compliance orders --

3 Q. Right.

4 A. -- that was a requirement we did, and the state never did  
5 approve any of those modifications, at least for us, and I  
6 don't think for anyone else.

7 Q. Did those modifications include some specific reference  
8 to or description of the quantity of flow that you expected to  
9 treat?

10 A. The quantity of flow that we proposed in our permit  
11 modifications was left open, and, you know, DEP -- we got into  
12 a circular discussion with the DEP reviewers at the time where  
13 they kept asking for more detail. And in that process, we  
14 kept on asking for more guidance.

15 Q. Uh-huh.

16 A. And so it became quite circular. So this process, you  
17 know, we were having very much -- a lot of difficulty getting  
18 any guidance out of DEP for permitting purposes all along.

19 Q. Well, I know that the SEPs were required under the Boone  
20 County decree. Was DEP involved in the design or  
21 implementation of those SEPs?

22 A. Not in the design or implementation. They approved  
23 those, you know -- DEP approved those, of course, at the front  
24 end.

25 Q. All right. Well, on the front end was there an effort by

McHale - by the Court

1 Patriot to have DEP as part of the approval of the SEPs in  
2 effect implicitly approve a quantity of flow that would be  
3 treated under the -- at least through the SEPs? I mean it  
4 seems to me that's part of the design of them, was that they  
5 would only treat a certain part of the flow.

6 A. Not specifically, but there are provisions in the decree  
7 that at any point in time DEP could order us to cease using  
8 any system or to use another system based on performance. And  
9 so, you know, there were provisions in there, but they were  
10 not specifically involved in approval of specific details of  
11 any design.

12 Q. One last thing on this subject generally with flows. If  
13 you could get DEP to approve something related to, in essence,  
14 allowing you to treat less than the maximum possible flow,  
15 what is it you would ask them to do?

16 A. What would we ask them?

17 Q. Yes, what would you ask DEP to approve?

18 A. For what flow rates, Your Honor?

19 Q. Yes.

20 A. Well, we certainly believe that the base flow or dry  
21 weather flow is the maximum flow that we probably would have  
22 to treat. We think it could be less, but those types of  
23 things, once you get into detail design, you can work that  
24 out.

25 Q. And can you explain to me why you think that should be a

McHale - by the Court

1 satisfactory level of treatment?

2 A. Okay, Your Honor. Because basically in my understanding  
3 and my experience, the dry weather flow takes care of the  
4 majority of water. In the normal NPDES process, we're  
5 required to sample a minimum of two times per month at each  
6 outlet. And those are typically -- you know, those are not  
7 typically done during a storm event. Those are done during  
8 relatively dry weather, and, you know, the theory being the  
9 concentrations are generally going to be the maximum at that  
10 point. So if you're in compliance at that point, you're  
11 generally in compliance.

12 So therefore, you know, that's what we do for every other  
13 parameter. And so selenium we don't believe should be treated  
14 any differently in that way. So you're basically -- what we  
15 are monitoring in our discharge monitoring reports is an  
16 approximation of our base flow.

17 Our water quality standards are set by monitoring stream  
18 flows in drought conditions, the theory being that's when the  
19 maximum concentrations are. That's why that's -- that's why  
20 the NPDES process is set up that way. We don't think storm  
21 flows are a problem, but we're in a quandary at this point in  
22 that we don't know if we are required to treat all of the  
23 water in this case.

24 This is the first, you know, instance I'm aware of or at  
25 least in my experience where we have this type of situation

McHale - by the Court

1 where we can't just chemically treat at an outlet. We  
2 typically apply a chemical at an outlet as needed to achieve  
3 compliance, and therefore you don't have to determine all the  
4 water that's flowing through the outlet. You just simply need  
5 to monitor your outlet and determine if you're in compliance.

6 In this case we're trying to, before we install a system,  
7 determine the exact amount of water that system has to be  
8 designed for before we can even get it approved. It's a  
9 little different animal than what we've had in the past.

10 Q. All right. Let me just turn your attention, then, to two  
11 other bullet points listed as part of those recommendations on  
12 pages 3 and 4. They're not numbered, but it appears that the  
13 fourth one and the fifth one in particular discuss FBR,  
14 fluidized bed reactor treatment, and it pretty plainly states  
15 that they would -- CH2M Hill would recommend that -- or first  
16 stated that they thought that the FBR system was the lowest  
17 capital cost, etcetera. So it seems that they think it's the  
18 most practical one. And they reaffirm that in the next  
19 paragraph.

20 I'm puzzled why you didn't have a pilot project for FBR  
21 until this year when it seems to me they made a very strong  
22 recommendation for an FBR being at least considered back in  
23 January of last year.

24 A. Yes, they did, Your Honor, and they also made a  
25 recommendation for us to continue with the ZVI. And at the

McHale - by the Court

1 time, we were fairly -- we were pretty optimistic about the  
2 MATRIC approach. We really thought we had something there and  
3 we chose to put our priority on that approach. And with all  
4 the other pilots we were doing at the time, we put all our  
5 efforts in that, and we didn't discount the FBR, but we  
6 thought that was something we could do, you know, if one of  
7 these didn't lead in the right direction.

8 Q. Well, I guess that's what troubles me a bit about it. As  
9 I understand it, at that point even the consultant states that  
10 FBR hadn't actually been used for selenium. It had been used  
11 for other things and they thought it had very clear  
12 application to selenium.

13 A. Yes, sir.

14 Q. I'm just puzzled why, you know, we have a fairly  
15 considerable list of different types of pilot projects at  
16 different periods of time over these last three years, why you  
17 didn't at least do a pilot project at one of these outfalls  
18 with FBR, especially since, as they indicate, it's one of the  
19 low capital cost alternatives that could be pursued.

20 A. Yes, Your Honor. All I can say to that is we had other  
21 pilots that were on deadlines for various -- under the Hobet  
22 consent order that we had to get done at the time, and we were  
23 putting our efforts into the ZVI foam and, you know, did not  
24 conduct the FBR pilot at that time.

25 Q. As we sit here today, is it your position that it's the

McHale - by the Court

1 FBR system that ought to be used as a next -- that this pilot  
2 project for FBR ought to be used, and then what would you  
3 envision after that?

4 A. I think that the FBR system has promise and we need to  
5 look at installing it at a scale that we think we can come in  
6 compliance within the parameters I just described to you in  
7 our normal process of judging compliance.

8 I also still believe very strongly that ZVI has an  
9 application, and no one has ruled it out. Everyone agrees  
10 that it reduces selenium. It does just as well in pilot  
11 settings as most other things. The FBR, you know, probably is  
12 doing -- has done better.

13 Q. In your mind are we down to really two alternatives,  
14 either fluidized bed or ZVI?

15 A. In my mind, yes, sir.

16 Q. So you think based on all the work that's been done thus  
17 far, you would rule out the other approaches that have been  
18 described, the other technologies that have been described and  
19 used over the last three years.

20 A. Yes, I would.

21 THE COURT: Okay. All right.

22 MR. HURNEY: Can I follow up?

23 THE COURT: Yeah. Sure.

24 MR. HURNEY: Thank you, Your Honor.

25 BY MR. HURNEY:



McHale - Cross

1 Q. Did CH2M Hill recommend a pilot of VSEP?

2 A. No, they did not.

3 THE REPORTER: I'm sorry. "Recommend" --

4 BY MR. HURNEY:

5 Q. I'm sorry. Did CH2M Hill recommend a pilot of VSEP?

6 A. No, they did not.

7 Q. Did that pilot result from the agreement in the consent  
8 order?

9 A. Yes, it did.

10 Q. Was Dr. Culkin involved in that?

11 A. Yes, he was.

12 Q. Did Dr. Culkin ever urge you that VSEP would solve the  
13 problem?

14 A. Yes, Dr. Culkin said VSEP was the solution to the  
15 problem.

16 Q. These are hugely expensive systems, aren't they?

17 A. Yes, they are.

18 Q. When they talk about ZVI and all these others, these are  
19 all -- when we talk about FBR being the least expensive, FBR  
20 is still a very expensive system, isn't it?

21 A. Yes, it is.

22 Q. And my understanding of the ballpark figure for treatment  
23 at -- from CH2M Hill of treatment of three Apogee sites is  
24 around 40 million.

25 A. For a centralized system, yes.

McHale - Cross

1 Q. And you've heard -- we heard for the first time yesterday  
2 a number of 95 million. Have you heard that number before?

3 A. No, that was the first I'd heard that.

4 Q. Is part of your consideration of these projects that the  
5 idea that you're going to -- that you have to have some sense  
6 of what you're going to treat and whether it's going to work  
7 before you invest millions of dollars?

8 A. Yes.

9 Q. You indicated that you had gone to -- you kind of  
10 informally asked the DEP for guidance. Have you done that on  
11 other occasions?

12 A. Generally, yes. I mean I can't think of a specific case  
13 for -- of design guidance, but for other types of things,  
14 specific problems.

15 Q. Do they ever decline or not give you any information?

16 A. No, generally -- generally they're pretty good about  
17 supplying us with guidance.

18 Q. Do you have any sense of why they were not supplying  
19 guidance to you as it relates to selenium issues?

20 A. My opinion is they don't know -- they don't know what --  
21 how to provide guidance on it.

22 Q. Do you know if there's an EPA best available technology  
23 for selenium removal?

24 A. The last that I -- the last I was aware of, EPA's listing  
25 for best available technology was a report I read back in

McHale - Cross

1 2000 -- or from 2001 where ferrihydrite adsorption was  
2 mentioned as the best available technology.

3 Q. And that's a variant of iron?

4 A. Yes, it is.

5 Q. Let me hand to you what is Joint Exhibit 11 and ask you  
6 to identify this document.

7 Your Honor, I realize this is outside -- this one  
8 document is outside your scope. I just couldn't find it  
9 during my direct.

10 THE COURT: That's all right.

11 MR. HURNEY: I hope the Court will give me some  
12 leniency.

13 THE WITNESS: Yes, that's a review of selenium  
14 technologies that was performed for the North American Metals  
15 Council.

16 BY MR. HURNEY:

17 Q. My only question about that document is -- you've made  
18 reference. That's the document that members of the council  
19 received or that the council published with respect to  
20 different technologies?

21 A. Yes, it was, in June of this year.

22 MR. HURNEY: Your Honor, thank you. I have no  
23 further questions.

24 THE COURT: All right. Redirect?

25 MR. LOVETT: Yes, Your Honor. I'd like to move the

McHale - Redirect

1 admission of Volume II of Mr. McHale's deposition.

2 MR. HURNEY: Your Honor, on what basis?

3 MR. LOVETT: It's relevant to the testimony here  
4 today and I'd like it in the record.

5 THE COURT: Well, the witness is testifying. I'm  
6 not sure that putting his deposition in --

7 MR. LOVETT: Okay. I'll try to use it, then. Thank  
8 you.

9 REDIRECT EXAMINATION

10 BY MR. LOVETT:

11 Q. Let's start to work backwards here. North American  
12 Metals Conference, is that an industry trade group?

13 A. Yes, it is.

14 Q. Okay. And Patriot is a member of that?

15 A. Yes, we are.

16 Q. Okay. You said that DEP's best available technology is  
17 ferrihydrite?

18 A. I said I thought that EPA's most recent guidance on that  
19 was ferrihydrite.

20 Q. You said EPA?

21 A. EPA.

22 Q. But that's not for treatment of selenate at sites like  
23 Apogee or Hobet, is it?

24 A. I was -- just my understanding was that was what was EPA-  
25 listed as the best available treatment technology for

McHale - Redirect

1 selenium.

2 Q. But it's not applicable at all to this situation,  
3 correct?

4 A. EPA's determination of it as BAT or in reality?

5 Q. In reality, let's say.

6 A. In reality we've ruled out ferrihydrite as a treatment  
7 technology. Now, we do use ferrihydrite in prevention, in  
8 in-situ treatment prior to -- to prevent formation.

9 Q. You started to talk about this meeting you had with DEP  
10 last week. We just, based on that testimony, are preparing a  
11 subpoena now for Randy Huffman and Tom Clark. Were they at  
12 the meeting?

13 A. Yes, they were.

14 Q. Okay. We intend to have them come here and testify, so  
15 I'd like to hear what you just testified to again to try to  
16 understand it.

17 Now, first you said, I think, in your response to the  
18 judge's question that they told you you had to comply with  
19 your permit; is that right?

20 MR. HURNEY: Judge, I'm going to object. May we  
21 approach?

22 THE COURT: Yes. Mr. Lovett, why don't you come on  
23 this side so my court reporter can be here in the middle.

24 Mr. Hurney, you come on the other side. Sorry. Put her  
25 in the middle.

McHale - Redirect

1 (Bench conference on the record with counsel)

2 MR. HURNEY: I raise the objection and the  
3 suggestion that he's going to subpoena additional witnesses to  
4 come in is we engaged in two days of settlement negotiations  
5 in this case, and part of what we agreed to do was to talk to  
6 the DEP about the general parameters, and that's what  
7 happened.

8 Now, we've kind of been going back and forth here because  
9 during the discussions, our engineer shared a lot of  
10 investigation back and forth, and Joe and I have been trying  
11 to parse out those things that were settlement negotiations  
12 from those things that were information that these witnesses  
13 can't all of a sudden not know. And what I'm concerned about  
14 is some suggestion of an inappropriate meeting when we told  
15 them we were going to go run this by the DEP and invited them  
16 to attend and they declined to attend. I think it's unfair.

17 MR. LOVETT: That's not my understanding of what  
18 happened. We agreed -- we did not go to the meeting with the  
19 DEP. I asked him yesterday, in fact, if he had had any  
20 discussions with the DEP about flow, and he only mentioned the  
21 informal conversations he had had with Mr. Clark and others.  
22 He did not mention this meeting that took place last week.

23 I knew that a meeting took place between you and the DEP  
24 last week is true. I did not raise that here. He did. Now,  
25 once he does that, he testified what happened at that meeting.

## McHale - Redirect

1 I wasn't there. I didn't want to attend because we didn't  
2 have a settlement. You understood and I understood that we  
3 agreed to attend that meeting if we had a settlement, but  
4 because we didn't, we weren't going to go and make any  
5 representations to the DEP. And now your witness has  
6 testified about what the DEP told him, and it's hearsay, but  
7 he got it on the record.

8 THE COURT: What is it that you want to ask him?

9 MR. LOVETT: I'm going to ask him -- do you mean the  
10 DEP or him?

11 THE COURT: Him.

12 MR. LOVETT: I want to ask him what the DEP told  
13 him.

14 MR. HURNEY: I think that's all tied into an ongoing  
15 effort to try to settle the case. I didn't --

16 THE COURT: Well, you know, obviously the witness  
17 did bring it up. He brought it up in response to my  
18 questioning. I don't think it's protected by the settlement  
19 rule. I think this is -- I mean his -- I think he's allowed  
20 to ask these questions, what happened at the meeting and what  
21 he understood with DEP.

22 MR. HURNEY: I just think that the tenor with which  
23 he's asking is suggesting there was something inappropriate  
24 when we were doing our best effort to try and get this thing  
25 worked out.

McHale - Redirect

1 THE COURT: Well, I don't think he's claimed that it  
2 was inappropriate.

3 MR. HURNEY: I heard he had two more witnesses.

4 THE COURT: Well, I think he may challenge the  
5 witness's version of what the communication from DEP was.

6 MR. HURNEY: Right.

7 MR. LOVETT: Maybe the witness misunderstood it, for  
8 all I know.

9 THE COURT: Well, anyway I've ruled.

10 (End of bench conference)

11 BY MR. LOVETT:

12 Q. Mr. McHale, you had a meeting last week with the DEP; is  
13 that correct?

14 A. Yes, I did, on Thursday.

15 Q. And at the meeting were -- who was there besides Randy  
16 Huffman and Tom Clark?

17 A. Jeff Parsons.

18 Q. Okay.

19 A. And Scott Manderall (phonetic).

20 Q. How long did the meeting take?

21 A. Around an hour.

22 Q. And as I understood your testimony, the first part of it  
23 was DEP told you that you would have to comply with the  
24 permit.

25 A. We went to the meeting to broach certain things that we



McHale - Redirect

1 had discussed last week with you and --

2 Q. Sure.

3 A. -- if they were able to be permitted. That was like if  
4 we were to put additional ponds in Slab Fork, if equalization  
5 was necessary, how would they -- this was the purpose of the  
6 meeting.

7 Q. You can testify about this if you want. I'm not asking  
8 you about this. I'm asking you a much narrower question. I  
9 mean I'm only asking you about what flow DEP told you you had  
10 to treat.

11 A. Well, that's the context I'm trying to provide. They did  
12 not just come out and say, "You have to comply with your  
13 permit." I broached the question as to, you know, "Are you  
14 telling us what flows we have to treat?"

15 Q. Okay.

16 A. And they basically said, "That is -- you know, that needs  
17 to be submitted -- determined by you and submitted to you, but  
18 what we are interested in is compliance at the outlet."  
19 That's what they said.

20 Q. Okay. And as I understand your testimony yesterday and  
21 the law, compliance at the outlet for water quality based  
22 effluent limits means you have to treat all of the water to  
23 ensure that it meets the water quality standard; is that  
24 right?

25 A. We have to be in compliance with our -- when we sample,

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1 we have to be in compliance when we sample.

2 Q. And --

3 A. We don't sample all the time.

4 Q. No, but any time you sample, you have to be in  
5 compliance.

6 A. That's true.

7 Q. And you could easily sample during -- with your sampling  
8 schedule during a 5-year rain event; is that right?

9 A. You can sample at any time.

10 Q. It could be a 10-year rain event.

11 A. You can sample at any time.

12 Q. And if you sampled at a 10-year rain event and were  
13 bypassing the system, you'd be out of compliance, wouldn't  
14 you?

15 A. Bypassing what system?

16 Q. The selenium treatment system. Let me -- I'll start  
17 again. If you -- let's say that you have a permit for average  
18 flow for treating selenium, okay? What would a 10-year --  
19 strike that all.

20 If you designed a system and installed a system to treat  
21 the average flow, would a 10-year rain event cause some of the  
22 water to bypass the system?

23 A. Depending -- depending on the design of the system,  
24 whether it was designed for a 10-year event or not.

25 Q. But I'm saying it wouldn't be designed for a 10-year

McHale - Redirect

1 event. You've designed it for a 1-year event.

2 A. Yes, some water would bypass the treatment system.

3 Q. And if your sampling dates happen to occur on that day,  
4 it's likely, isn't it, that you would be out of compliance  
5 with your selenium limits on that day?

6 A. Not necessarily, in my opinion, because my opinion is the  
7 storm water flow would be dilute.

8 Q. What is that opinion based on?

9 A. That's just based on my experience with water treatment  
10 over the years and basically accepted -- you know, the  
11 accepted practice in NPDES water management.

12 Q. Okay. You don't have any data to support that  
13 contention, do you?

14 A. As it relates to selenium, we're in the process of  
15 collecting that.

16 Q. But you don't have it yet, do you?

17 A. No.

18 Q. And do you have any preliminary results from that  
19 collection of data?

20 A. I have not seen any yet. They're collecting data, but  
21 they've not sent out any to us.

22 Q. And you don't have any idea that showing that diluted  
23 water doesn't have high selenium concentrations or not, do  
24 you?

25 A. I don't have any data that shows that.

McHale - Redirect

1 Q. Okay. So to go back to the conversation with DEP, did  
2 DEP tell you that it would be sufficient for you to treat only  
3 the base flow for selenium?

4 A. They said that the amount -- that the design treatment  
5 would be up to us, but that, you know, the end result needs to  
6 be that your DMR samples are in compliance. That's what they  
7 told us.

8 Q. So they didn't tell you that you only had to treat the  
9 base flow. Is that now what you're saying?

10 A. They said that -- yeah, I asked them if we submitted a  
11 plan for base flow, would they accept it, and they indicated  
12 that they probably would.

13 Q. Who indicated that to you specifically?

14 A. I think it was Jeff Parsons, but there was no  
15 disagreement with that.

16 Q. Jeff Parsons told you that he would accept an application  
17 and approve an application for base flow?

18 A. They said that the important thing was for us to submit  
19 the flow, whatever flow we submitted, and I suggested base  
20 flow. It could be another flow. They did not sanction base  
21 flow. I could have submitted a lesser flow. But they said,  
22 you know, "If you have a plan, a treatment system with a  
23 design flow, submit it. You know, we can approve it, but, you  
24 know, obviously if you don't achieve compliance at the point,  
25 you have to modify -- at the discharge point, you have to

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1 modify your plan."

2 Q. So any plan that you submit, whatever the base is, would  
3 have to achieve compliance at the outfall for all storm  
4 events; is that right?

5 A. We sample twice a month. We sample in compliance with  
6 our NPDES permit.

7 Q. Yes.

8 A. That is what we have to be in compliance with.

9 Q. And when you sample twice a month, do you do it on the  
10 1st and 15th of the month? How do you do it?

11 A. It is set up with our laboratories. They do it on a  
12 rotating schedule.

13 Q. So any day they came out there and sampled, you have to  
14 be in compliance.

15 A. Yes.

16 Q. No matter what the rain event.

17 A. That's correct.

18 Q. Okay. And to be in compliance, that means that your  
19 effluent in this case cannot exceed 5 parts per billion  
20 selenium.

21 A. Could not exceed the permit limits, the 4.7 monthly  
22 average and 8.2 daily max.

23 Q. And you don't have any reason to believe as you sit here  
24 today or any data to support the contention that a 1-year  
25 storm event is any more dilute for selenium than base flow, do

McHale - Redirect

1 you?

2 A. Was the question do I have any data?

3 Q. Yes.

4 A. No, I don't.

5 Q. And is DEP telling you if you submitted a permit for base  
6 flow and it approved it, you'd sort of be doing it at your own  
7 risk?

8 A. DMR reports -- the DMR reports go out on a continual  
9 basis. That is the basis on which your compliance is judged.

10 Q. And so if you were issued a permit that allowed you to  
11 treat only your base flow and bypass treating higher flows,  
12 DEP is saying you do that at your own risk. Is that a fair  
13 assessment?

14 A. I wouldn't characterize it that way.

15 Q. Does DEP understand the law to be, as far as you know  
16 from this conversation, that you have to comply during all  
17 rain events with your permit limits?

18 A. You'd have to ask DEP.

19 Q. Okay. All right. Now, as far as the FBR pilot, you say  
20 you could have moved the FBR pilot up if not for other  
21 deadlines?

22 A. That would have made it difficult to move it up.

23 Q. Why is that? Why couldn't you have done the FBR pilot  
24 simultaneously with the other pilots?

25 A. We thought that what -- we thought what we were doing at

McHale - Redirect

1 the time was the most efficient utilization of our efforts.

2 Q. Do you have any reason you couldn't do them  
3 simultaneously?

4 A. We were doing things simultaneously.

5 Q. You were also working with ZVI?

6 A. Yes, we were.

7 Q. You testified that ZVI does as well in pilot studies as  
8 anything else?

9 A. Yes, in my estimation.

10 Q. Is there a single report from anybody saying that?

11 A. That it does as -- I don't have it. There's no report  
12 ranking any of those technologies anywhere.

13 Q. Is there any report showing even -- any report from  
14 ZVI -- I mean from MATRIC, from Liberty, or from CH2M Hill  
15 that shows that a ZVI pilot has achieved compliance on a  
16 consistent basis with your permit limits?

17 A. No, we don't claim that we have it on a consistent basis.

18 Q. Well, then, why do you think -- why do you say that ZVI  
19 does as well as anything else in piloting?

20 A. Because it has been shown to reduce selenium levels to  
21 below 5 parts per billion for a limited duration, which all of  
22 our pilots have been limited duration.

23 Q. But those pilots also show that it didn't achieve  
24 compliance during that period, right?

25 A. If you're referring to our systems that are installed now

McHale - Redirect

1 as pilots, that's an incorrect characterization. They're  
2 actually treatment systems at a basic level.

3 Q. They are? Are they achieving compliance at any of your  
4 outfalls?

5 A. No, but I don't consider them pilots. At the level of a  
6 pilot compared with the other technologies, there were  
7 comparable results.

8 Q. Let's get this straight. You have -- you have at several  
9 outfalls on Hobet a few tanks, six or eight tanks treating  
10 about 24 gallons per minute at some outfalls, right?

11 A. Yes.

12 Q. And the flow is much greater at most of those outfalls  
13 than what's being treated, correct?

14 A. Yes, at many of them.

15 Q. And even at that rate, you're not achieving compliance at  
16 those outfalls, are you?

17 A. No, we aren't.

18 Q. And you don't have any study produced by anyone analyzing  
19 a ZVI pilot, do you?

20 A. The initial -- the initial pilot that I described earlier  
21 that we did at the Samples Mine at Catenary, that was a pilot.

22 Q. And when was that?

23 A. And then we had a pilot at -- that was in -- it operated  
24 from January of 2007 through pretty much the end of the year.

25 Q. And that study showed that ZVI didn't work.



McHale - Redirect

1 A. They were treating low volumes comparable to the other  
2 pilots for other technologies in the range of one to five  
3 gallons per minute. And that pilot showed that it could  
4 reduce selenium below 5 parts per billion.

5 Q. Okay. So you're saying that the 2008 pilot study for ZVI  
6 showed that it worked as well as other pilots.

7 A. The 2007.

8 Q. 2007.

9 A. Well, that was the first pilot we had done on any  
10 technology.

11 Q. Was that at Catenary?

12 A. Yes, it was.

13 Q. And it didn't reduce the selenium limits all the time,  
14 did it?

15 A. For the flow treated, it was consistently reducing it.

16 Q. But it was very low flow.

17 A. Comparable to what we had for VSEP.

18 Q. And --

19 A. The same flow rates.

20 Q. -- all the time, that pilot study will show that at all  
21 times it reduced to below 5 parts per --

22 A. In my view, what we could describe as consistent. I  
23 don't know if it was a hundred percent of the time, but it was  
24 consistently reducing selenium to those levels.

25 Q. Well, what is "consistent"? More than 50 percent?

McHale - Redirect

1 A. Certainly, yeah, more than 50 percent.

2 Q. Less than 75?

3 A. I don't have all that data in front of me, but our  
4 results at the time were that, you know, we thought it would  
5 reduce it. The only pilot so far that has consistently  
6 reduced it is FBR.

7 Q. You just -- ABMet did, didn't it?

8 A. At a very low flow rate, yes, it did, at a very low flow  
9 rate, less than one gallon per minute.

10 Q. And so did VSEP.

11 A. No, it didn't.

12 Q. Okay.

13 A. Not consistently. It had leakage across the membranes.

14 Q. Okay. I want to go back to the ZVI study. Now, you're  
15 telling me that -- I'm unclear. Do you believe that the ZVI  
16 study of the Catenary showed effective treatment less than  
17 75 percent of the time or more than 75 percent of the time?

18 A. I can't give you a percentage. We determined that it was  
19 sufficient to move forward with.

20 Q. Is there any other pilot study that you base your  
21 statement that ZVI does it as well as anything else?

22 A. The other pilot was at Hobet in early 2008.

23 Q. And what did that pilot show?

24 A. That showed that we could get consistent reduction of  
25 selenium.

McHale - Redirect

1 Q. Was consistently defined the same way?

2 A. Yes.

3 Q. And how often did ABMet get consistent reduction of  
4 selenium?

5 A. They were able to reduce it to less than 5 parts per  
6 billion when they reached their equilibrium state.

7 Q. It was a short --

8 A. It was a relatively short pilot.

9 Q. A hundred percent of the time, right?

10 A. That's my understanding.

11 Q. FBR as well?

12 A. FBR, yes, once it got to the equilibrium state.

13 Q. I'll just ask you one more time. How can you say, then,  
14 that the ZVI pilot is as successful as those?

15 A. Because it controlled conditions similar to it. It  
16 reduced selenium to the same levels.

17 Q. But not consistently or not at above a rate somewhere  
18 below 75 percent, right?

19 A. In the controlled pilot setting it reduced it to less  
20 than 5 parts per billion.

21 Q. Okay. Have there been any reports done on ZVI since  
22 2008?

23 A. By whom?

24 Q. By anyone.

25 A. Other than what was referenced in CH2M Hill, I'm not

McHale - Redirect

1 aware of any since 2008.

2 Q. Well, you've certainly not tasked CH2M Hill to evaluate  
3 ZVI as a technology by doing a pilot, have you?

4 A. We have not asked them to do a pilot on it, no.

5 Q. And you haven't asked them whether or not they recommend  
6 that you use ZVI as a technology, have you?

7 A. They recommended that we continue to evaluate these  
8 systems.

9 Q. You, in fact, never asked until maybe Monday, never asked  
10 anyone to -- excuse me -- you never asked CH2M Hill to  
11 recommend any technology to you, have you?

12 A. I'm not sure I fully understand what you're doing. This  
13 whole process has been to get to a point where they could  
14 recommend one to us.

15 Q. But you've never asked -- until at least Monday of this  
16 week, you never said to CH2M Hill, "Which one of these should  
17 we use?"

18 A. Not specifically, because that was their task. And  
19 the -- we didn't ask them to recommend FBR either. They got  
20 to the point in their analysis where they made a  
21 recommendation. That's what we hired them to do, not to lead  
22 them.

23 Q. Okay. Material handling plans. You say you have  
24 material handling plans for selenium now?

25 A. Yes, we do.

McHale - Redirect

1 Q. Okay. And do you have one of those at Hobet 22?

2 A. Yes, we do.

3 Q. Are you violating consistently your permit limits at  
4 Hobet 22?

5 A. We have had violations of our limits there.

6 Q. So the material handling plan doesn't work; is that  
7 right?

8 A. We think that it is working to reduce selenium. It just  
9 has not -- we've not gotten it to compliance at this point.  
10 Compared to adjacent permits, the selenium concentrations are  
11 much lower.

12 Q. But you don't know why that is, do you?

13 A. Yes, we believe it's because of a selenium handling plan.

14 Q. Nevertheless, you're violating your selenium limits by  
15 quite significant margins, right, at Hobet?

16 A. For the most part, it's just barely above.

17 Q. Do you have a number of 20.9 parts per billion in October  
18 2009 there?

19 A. It has gotten -- it has spiked to that high.

20 Q. Do you consider that just barely above?

21 A. No, but that -- those were more or less isolated events.  
22 For the most part, it is in the single digits.

23 Q. How many do you have above 10 do you think?

24 A. I don't have that exact number. I'm speaking from just  
25 reviewing the data.

McHale - Redirect

1 Q. Several, though?

2 A. We have several above 10, yes. That compares to adjacent  
3 permits that are in the 20's and 30's.

4 Q. Do the adjacent permits have valley fills associated with  
5 the treatment system?

6 A. Not associated with the treatment system.

7 Q. Associated with the pond?

8 A. Yes, they do.

9 Q. Does Hobet 22?

10 A. Hobet 22 does not have a valley fill.

11 Q. Could that be the reason that Hobet 22's selenium  
12 concentrations are lower?

13 A. In my opinion, no.

14 Q. It could be, though, couldn't it?

15 A. In my opinion, it is not.

16 Q. What's your opinion based on?

17 A. My opinion is based on my belief that selenium  
18 concentrations are a result of leaching through broken  
19 overburden material and it doesn't matter whether it's in a  
20 valley fill or in a back stack on a surface mine. It is still  
21 the same type of material that water drains through.

22 Q. Well, does the water at the other outfalls percolate  
23 through more spoil than the one at Hobet 22?

24 A. I don't know.

25 Q. Well, that could be the reason, then, couldn't it? Could

## McHale - Redirect

1 be that there's less spoil that is going through at Hobet 22  
2 than at your other sites.

3 A. Every site is going to be different, but I have no reason  
4 to believe that that's the reason.

5 Q. The WVU project that you described that's ongoing, I  
6 think, and you started in 2008, that's not to help you treat  
7 selenium, is it?

8 A. There are two WVU projects going on. One is for the  
9 supplemental environmental project, the watershed study. The  
10 other one is an in-situ treatment study which, yes, it's meant  
11 to help you prevent formation of selenium.

12 Q. A material handling plan kind of study? Is that what you  
13 mean?

14 A. Well, it is broader than that, but one of the aspects of  
15 it is to, you know, to supplement your material handling  
16 plans.

17 Q. But that's not going to help you treat the effluent at  
18 these sites, is it?

19 A. At which sites?

20 Q. Apogee or Hobet 22.

21 A. At Hobet 22, yes.

22 Q. How's that?

23 A. It's being conducted up at that -- in that location right  
24 now. That's where we're doing a ferrihydrite placement on a  
25 demonstration basis.

McHale - Redirect

1 Q. Any pilot report from that?

2 A. Not yet.

3 Q. Now, the watershed storm water evaluation that CH2M Hill  
4 is doing --

5 A. Yes.

6 Q. -- that's intended to determine whether or not higher  
7 volumes of water contain selenium that exceed the 4.7 parts  
8 per billion?

9 A. Not exactly. It's meant to determine whether storm water  
10 volumes contain some higher selenium concentrations.

11 Q. Now, that was recommended to you to start that study by  
12 CH2M Hill in January of 2009; is that right?

13 A. Excuse me? Could you repeat that?

14 Q. CH2M Hill recommended in its January 2009 report that you  
15 start that study.

16 A. Yes, I believe they did.

17 Q. And I heard you tell the Court, I think, that you  
18 actually got it going in April of 2010.

19 A. Yes.

20 Q. Why didn't you start it immediately since it seems to be  
21 something that you place so much importance on?

22 A. That is something that we had been talking with DEP about  
23 doing under our Hobet consent order.

24 Q. Why didn't you start the project earlier than April of  
25 2010 when CH2M Hill told you to start it in January of 2009?



McHale - Redirect

1 A. Well, we thought that -- we thought that we could do it  
2 in conjunction with the Hobet consent order since we had  
3 certain obligations to conduct studies under that, and we  
4 thought that would be a more appropriate way to do it.

5 Q. Now, the systems installed at -- you said there were  
6 systems installed at Hobet, I think. Those are all these  
7 partial systems, right?

8 A. Yes, base systems.

9 Q. Okay. None of them are intended to treat the entire flow  
10 or even the base flow.

11 A. Most -- no, they are not.

12 THE COURT: Those are all ZVI systems?

13 THE WITNESS: Those are all ZVI systems.

14 THE COURT: We need to take a break soon. Would now  
15 be a good time to do that?

16 MR. LOVETT: That's fine, Your Honor.

17 THE COURT: All right. We're going to take a  
18 10-minute recess. You may step down.

19 (Recess from 10:35 a.m. to 10:53 a.m.)

20 THE COURT: All right. Go ahead.

21 BY MR. LOVETT:

22 Q. The review of available technologies that you referenced  
23 from the North American Minerals Council --

24 A. Yes.

25 Q. -- do you have that report up there?

McHale - Redirect

1 A. Yes.

2 Q. It's Exhibit 11. I guess it's Joint Exhibit 11?

3 THE COURT: That's right.

4 BY MR. LOVETT:

5 Q. Okay. Joint Exhibit 11. On page 516, 5-16, VSEP  
6 Membrane Technology.

7 A. Yes.

8 Q. Do you see that?

9 A. Yes.

10 Q. I think I'll draw your attention to about one-third of  
11 the way down that paragraph where it says, "At an average  
12 overall recovery" -- do you see that sentence? -- "of  
13 95 percent."

14 A. Yes.

15 Q. The initial results showed the system was able to remove  
16 the effluent concentrations to below target concentrations of  
17 5 micrograms per liter.

18 A. Yes.

19 Q. It says, however, with time, membrane fouling issues were  
20 observed even with the addition of anti-scalant and pH  
21 adjustment to an acidic pH.

22 A. Yes.

23 Q. Okay. So the problem was with pretreatment, as I  
24 understand it, not with the membrane system itself; is that  
25 right?

McHale - Redirect

1 A. I don't have enough in there to make that conclusion.  
2 They just said it had problems.

3 Q. And I think you said that the GE pilot study for the RO  
4 that you did was a catastrophic failure; is that true?

5 A. Yes, in my opinion.

6 Q. I draw your attention to Joint Exhibit 39.

7 May I approach?

8 THE COURT: Yes, you may.

9 BY MR. LOVETT:

10 Q. Is this a report prepared by GE for Magnum for the RO  
11 pilot?

12 A. Yes.

13 Q. And let's look at the executive summary on page 5 of 13.  
14 Do you see that?

15 A. Yes.

16 Q. Does it say in the second bullet point RO was able to  
17 remove selenium down to an average of .0025 parts per million  
18 or 2.5 parts per billion in the permeate stream?

19 A. Yes.

20 Q. That's below your permit limit, right?

21 A. Yes, it is.

22 Q. And then I think that the problem with the RO pilot, as I  
23 understand it, is that there was fouling; is that right?

24 A. Yes.

25 Q. And GE recommended, didn't it, in the last bullet point

McHale - Redirect

1 an ultra filtration unit upstream of the RO pilot would  
2 adequately pre-strain the water source; is that right?

3 A. Yes.

4 Q. And it recommended that you put on that pretreatment to  
5 see if that would work, didn't it?

6 A. I don't see that recommendation.

7 Q. No, it recommended it to you, though, not in this study,  
8 right?

9 A. To my knowledge GE never recommended an ultra filtration  
10 system to us.

11 Q. Did it recommend that you -- did it -- is it your  
12 understanding that pretreatment would take care of this  
13 problem, the fouling and scaling problem?

14 A. Would solve it? No, that's not my understanding.

15 Q. Did you tell GE that you were preparing a purchase order  
16 for an ultra filtration system for the pilot?

17 A. I don't recall that.

18 Q. Are you sure? Can you think about it?

19 A. I'm pretty sure. In fact, we never discussed an ultra.  
20 We discussed a micro filtration system, which is not as -- not  
21 the same thing.

22 Q. Okay. Would a micro filtration --

23 A. Yes.

24 Q. -- system work to -- or is it likely that a micro  
25 filtration system would take care of the fouling problems --

McHale - Redirect

1 A. I don't know how likely it is. They proposed it as a  
2 possible thing that they could do.

3 Q. Did you prepare a purchase order for a micro filtration  
4 system?

5 A. I don't remember doing that.

6 Q. So why did you pull the plug on the RO pilot for trying  
7 to deal with pretreatment issues?

8 A. It failed so quickly, in two weeks, that we decided it  
9 was best to move on to the ABMet.

10 Q. Did you save some money by doing that from the SEP with  
11 the state that you could use somewhere else?

12 A. No, we didn't save any money. That was just money that  
13 would be diverted to another project.

14 Q. Another project in the SEP?

15 A. Yes.

16 Q. Did DEP in this meeting that you had on Monday really  
17 tell you that you only had to comply with your permit limits  
18 on the day that the sampling was done?

19 A. I didn't meet with them on Monday.

20 Q. I'm sorry. Last week.

21 A. Did they tell me what?

22 Q. That you only had to comply with your permit limits on  
23 the day the sampling was done.

24 A. No, no, they didn't say that.

25 Q. And that's not right, is it? You have to comply with

McHale - Redirect

1 your permit limits every day.

2 A. The only way to determine what your compliance is on  
3 your -- is when you sample. I can't go out on a day that's  
4 not sampled and know what --

5 Q. But the sampling is based on the assumption that it will  
6 be representative and that you have to comply with your permit  
7 limits.

8 A. Yes, it is representative.

9 Q. And, in fact, you're required to comply with your permit  
10 limits every day.

11 A. I'm required to be in compliance with the permit limits  
12 subject to the sampling protocol in the NPDES permit.

13 Q. And if you sampled three times -- you could sample three  
14 times, couldn't you?

15 A. Yes, I could.

16 Q. You could sample every day.

17 A. I could.

18 Q. And every day you sample, you have to be in compliance,  
19 correct?

20 A. Yes.

21 Q. And every day you don't sample, you still have to be in  
22 compliance, right?

23 A. I would have no way of determining compliance on days I  
24 don't sample.

25 Q. Are you supposed to be in compliance on days you don't

McHale - Redirect

1 sample?

2 A. There's nothing in the permit that says that. The permit  
3 says you will be in compliance with permit limits subject to  
4 the sampling protocol.

5 Q. Now, the partial systems that you described at Hobet  
6 being put up, does DEP accept those partial systems as  
7 satisfaction of its consent decree?

8 A. They have not objected -- they have not told us they were  
9 not.

10 Q. Okay. And what do you plan -- what do you plan to  
11 install at Hobet 22 right now to go full-scale?

12 A. We were planning to move it with a ZVI.

13 Q. What ZVI?

14 A. Most likely that would be the GMT style. We have not  
15 bought the system yet.

16 Q. Is anything there now?

17 A. Not yet.

18 Q. On this timeline, where on the timeline did you ask  
19 anyone to prepare proposals for a full-scale treatment system?

20 A. In November of 2008 we asked MATRIC to prepare a large-  
21 scale treatment system for the average flows at Slab -- at  
22 Apogee.

23 Q. And what happened to that?

24 A. It continued for, you know, up till the May time frame of  
25 2009, at which time, you know, we determined it was not going

## McHale - Redirect

1 to work anymore at that. And after that date, Liberty revised  
2 their whole treatment system scheme and came out with a system  
3 similar to GMT where they would offer a modular type setup,  
4 you know, small base system that could be augmented as needed.

5 Q. So the only time you asked anyone to prepare a full-time  
6 treatment system was at that point?

7 A. Yes.

8 Q. And that was never completed.

9 A. It did not -- did not result in success.

10 Q. The full-scale treatment system was never installed, was  
11 it?

12 A. No, because we couldn't come up with an adequate design.

13 Q. Where on the timeline did you ask anyone to prepare a  
14 proposal to install equalization?

15 A. We never -- I would never write a proposal to ask anyone  
16 to install equalization because I don't know what that is.  
17 Equalization can take many forms.

18 Q. And where on the timeline did you tell anyone to prepare  
19 a proposal to achieve compliance at all outfalls at Apogee by  
20 April 5, 2010?

21 A. I did not actually ask anyone in those specific words.  
22 Like I said, we asked MATRIC to prepare a -- to prepare a  
23 design and to install treatment by the specific date, but no  
24 one at that point in time, nor now, can design -- will give  
25 you a system and guarantee compliance.



## McHale - Redirect

1 Q. Is that what you asked for, a system that guarantees  
2 compliance?

3 A. That's what you just asked me, to achieve compliance.

4 Q. What kind of a guarantee are you asking for?

5 A. We would like some type of a warranty from someone that  
6 if we go ahead with this type of a system, it has a reasonable  
7 probability of achieving compliance.

8 Q. You want an unconditional guarantee?

9 A. Oh, I'd like one. I don't expect an unconditional  
10 guarantee, but I expect a reasonable guarantee.

11 Q. And that's been a condition for everything that you've --  
12 for the delay in asking for someone to put out systems that  
13 will treat your effluent?

14 A. That has been -- in my mind, that is something that is  
15 required.

16 Q. And what experience do you have seeking such guarantees  
17 in other circumstances?

18 A. When you're dealing with established technologies, it's a  
19 much easier hurdle to achieve. We're dealing here now with  
20 technologies that have either never been applied or never been  
21 applied in this setting. So you need a little bit of a better  
22 feeling before expending tens of millions of dollars that at  
23 the end of the day, you're not going to have to go back and  
24 say, "Oops, just didn't work."

25 Q. Do you think that's the way the wastewater treatment

McHale - Redirect

1 industry works generally, that guarantees are provided to --

2 A. I've never worked in the wastewater treatment industry.

3 I don't know.

4 MR. LOVETT: Thank you. That's all I have.

5 THE COURT: All right. Mr. Hurney?

6 MR. HURNEY: Your Honor, I don't have any further  
7 questions.

8 THE COURT: All right. Mr. McHale, you may step  
9 down.

10 THE WITNESS: Thank you, sir.

11 THE COURT: There are a lot of copies of the  
12 exhibits. I don't think any of those are the exhibits filed  
13 with the clerk, but --

14 MR. HURNEY: Would you like me to --

15 THE COURT: Yes, why don't we make sure that  
16 whoever --

17 MR. HURNEY: Your Honor, I just mentioned to  
18 Mr. Lovett, I think we have an agreement to admit all of the  
19 joint exhibits, rather than do it one by one, if that's  
20 acceptable to the Court.

21 MR. LOVETT: I don't know if every exhibit that we  
22 used during the witnesses are a joint exhibit or not. I can't  
23 remember. But we move the admission of all the exhibits.

24 I don't know of anything there, Tom, that's  
25 controversial.

1 THE COURT: All right. Any objection to that?

2 MR. HURNEY: No, Your Honor.

3 THE COURT: All right. So the Court will then  
4 consider as admitted by agreement all of the exhibits that  
5 have been identified and used for the direct and cross of each  
6 of the witnesses or the witnesses that testified thus far.

7 MR. LOVETT: Thank you, Your Honor.

8 THE COURT: Do you know whose those are? I don't  
9 think those are any of the Court's. I think I've got them all  
10 up here.

11 MR. HURNEY: Some of ours and some of theirs.

12 THE COURT: All right. Do you want to call your  
13 next witness?

14 MR. TEANEY: Yes, Your Honor. At this time  
15 plaintiffs have a video deposition that we would like to play  
16 for the Court. This is an evidentiary deposition pursuant to  
17 Rule F.R.C.P. 32. The witness is Phillip Rooney from GE.  
18 He's located outside of Philadelphia, Pennsylvania, so he,  
19 under 32, we can use his deposition as evidence.

20 I don't want to misrepresent what the -- this has been  
21 kind of fluid between the parties. We're likely to move for  
22 the admission of the entire transcript and show excerpts that  
23 have been agreed upon by the parties to the Court, but I do  
24 understand there is a caveat to that in that the defendants  
25 may have at least one objection to one of my inartful

1 questions during the deposition.

2 MR. HURNEY: I wouldn't object as inartful.

3 MR. TEANEY: Oh, and the other thing is I will need  
4 assistance from a legal intern we have. He's a law student at  
5 American University. May he come in front of the bar?

6 THE COURT: Yes.

7 MR. TEANEY: Thank you.

8 MR. HURNEY: Thank you, Your Honor. I apologize. I  
9 don't know that we've given you a copy of this deposition.

10 THE COURT: No, I haven't seen it.

11 MR. HURNEY: I have a copy that we're going to lodge  
12 in the record because it has both sides' markings for the  
13 testimony selected. The plaintiff is in gray. The defendant  
14 is in yellow.

15 THE COURT: All right.

16 MR. HURNEY: If it please the Court, I'll tell you  
17 what our objection is and then tender this to you so you can  
18 look at the testimony.

19 THE COURT: Why don't you use the microphone so my  
20 court reporter can hear you.

21 MR. HURNEY: Thank you, Your Honor. Your Honor,  
22 this issue, the witness was asked about whether ABMet could  
23 accommodate significantly fluctuating flows encountered at  
24 many outlets based on a statement they attributed to  
25 Mr. McHale. Mr. McLusky, who was present, objected that they

1 had not laid a foundation for this witness to comment on the  
2 efficacy of ABMet.

3 The question was answered subject to the objection. We  
4 don't believe that an appropriate foundation was laid to allow  
5 this witness to offer that opinion, would ask the Court to  
6 exclude that question and answer, which is on page 62 and 63  
7 of the transcript.

8 THE COURT: All right. Do you want to address that?

9 MR. TEANEY: I would. I would also like to say --  
10 and I'm sure there's no issue with it, but I have not had a  
11 chance to review that particular copy of that transcript. I'm  
12 relying on Mr. Hurney's representation that the highlights  
13 that I provided him ended up in that document. I'm sure that  
14 they did.

15 THE COURT: All right.

16 MR. TEANEY: As far as that objection, following --  
17 if you look at page 62, following my question to which  
18 Mr. McLusky objected, I then qualified and re-asked the  
19 question based -- and asked Mr. Rooney to respond based on his  
20 review of the pilot, did the pilot demonstrate that ABMet  
21 could do that. And I believe that that should have addressed  
22 Mr. McLusky's objection as to the foundation, because  
23 Mr. Rooney had testified that he had reviewed the ABMet pilot.

24 THE COURT: Well, I'm not going to rule at this  
25 point. I'll allow this in, and then after I hear or read

1 more, then I can decide whether I think there was an adequate  
2 foundation for his opinion. If there wasn't, then I'll  
3 exclude it. If there was, I'll permit it to stand and give it  
4 what weight I determine.

5 MR. TEANEY: Thank you, Your Honor.

6 THE COURT: All right.

7 MR. TEANEY: Mr. Pepper is going to assist me here.

8 THE COURT: About how long will this take? Any  
9 idea?

10 MR. TEANEY: It should run about a half hour.

11 THE COURT: All right.

12 (Video played)

13 (Video paused)

14 MR. TEANEY: I just want to -- can the Court and all  
15 necessary parties hear?

16 CLERK JUSTICE: I can hear it.

17 THE COURT: First, I can hear it.

18 MR. TEANEY: Okay.

19 THE COURT: I've got the transcript. I'll read  
20 along. Obviously my court reporter is going to have to rely  
21 upon the transcript. She's not going to be trying to report  
22 this.

23 MR. TEANEY: Okay.

24 (Video resumed)

25 THE COURT: Now I can hear it.

1 MR. TEANEY: Yeah.

2 (Video concluded)

3 (REPORTER'S NOTE: The transcript of the testimony of  
4 Phil Rooney will be filed with the clerk's office.)

5 MR. TEANEY: Nothing further from that witness.

6 THE COURT: All right. That concludes the  
7 deposition testimony. I'm going to deny the objection that  
8 was raised. I think the witness offered a basis for his  
9 opinion.

10 All right. We'll go ahead and take a recess now. We'll  
11 reconvene at 1:00 with the plaintiff's next witness ready to  
12 go.

13 MR. TEANEY: Thank you, Your Honor.

14 THE COURT: All right. We'll stand in recess.

15 (Lunch recess from 11:50 a.m. to 1:05 p.m.)

16 AFTERNOON SESSION

17 THE COURT: All right. Please call your next  
18 witness.

19 MR. TEANEY: Yes, Your Honor. The plaintiffs call  
20 Dr. John Koon.

21 THE COURT: Sir, if you'll step right up here, my  
22 clerk will swear you in and then you can take the stand.

23 JOHN H. KOON, PLAINTIFF'S WITNESS, SWORN

24 DIRECT EXAMINATION

25 BY MR. TEANEY:

Koon - Direct

1 Q. Good afternoon, Dr. Koon.

2 A. Good afternoon.

3 Q. Can you state and spell your name for the record, please.

4 A. John H. Koon, K-o-o-n.

5 Q. Thank you, Dr. Koon. I have a copy of your CV that I'd  
6 like to share with you. This is marked as Plaintiff's Unique  
7 Exhibit 1.

8 May I approach the witness, Your Honor?

9 THE COURT: You may.

10 MR. TEANEY: Thank you.

11 BY MR. TEANEY:

12 Q. Dr. Koon, have you seen this document before?

13 A. Yes, I have.

14 Q. Can you authenticate that it is indeed your curriculum  
15 vitae.

16 A. It is my CV.

17 Q. And is this a recent version?

18 A. Yes.

19 Q. Thank you. Dr. Koon --

20 A. Recent, but not all-inclusive.

21 Q. Okay. Meaning there are things you have done in your  
22 career that are not identified in this CV.

23 A. Yes.

24 Q. Okay. Dr. Koon, can you -- where did you obtain your  
25 bachelors degree?



Koon - Direct

1 A. Vanderbilt University.

2 Q. And what was your bachelors degree in?

3 A. Civil engineering or civil and environmental engineering;  
4 civil engineering.

5 Q. When did you -- I apologize. When did you obtain that  
6 degree?

7 A. 1967.

8 Q. Okay. And did you do graduate work?

9 A. Yes, I did.

10 Q. Where did you do your graduate studies?

11 A. I got a masters degree in civil and environmental  
12 engineering at Vanderbilt and then a Ph.D. in -- I think it  
13 was strictly civil engineering, but it was environmental  
14 engineering emphasis, at the University of California.

15 Q. And when did you obtain your Ph.D.?

16 A. 1971.

17 Q. At that time would there have been a Ph.D. in  
18 environmental engineering per se?

19 A. Oh, yes, kind of the beginnings of the field, but there  
20 definitely were Ph.D.s.

21 Q. Okay.

22 A. There have been at Berkeley since the late '50s, I  
23 believe.

24 Q. And after you obtained your Ph.D., where did you begin  
25 your work?

Koon - Direct

1 A. A company called AWARE, Incorporated, Associated Water  
2 and Air Resources Engineers.

3 Q. What did you do for AWARE?

4 A. I was a -- started out as a project engineer, I think,  
5 and ended as -- I think it was director of the operations  
6 division. AWARE was a specialty process engineering company.  
7 At that time we -- okay. Do you want me to elaborate just  
8 a --

9 Q. Just a bit.

10 A. Twenty-five words or less?

11 Q. Yes.

12 A. Specialized in helping industry comply with what was then  
13 the new Clean Water Act, to develop processes capable of  
14 treating industrial wastewaters and help them implement these  
15 solutions.

16 Q. With the appearance of the Clean Water Act, was this a  
17 relatively new thing for industry and others to comply with?

18 A. Yes, it was. I think one of the things we did in my  
19 tenure at AWARE was take the processes that today are  
20 generally and frequently used for industrial wastewater  
21 treatment from lab or small-scale studies to being applied  
22 full-scale.

23 Q. How long were you with AWARE?

24 A. I think it was 12 years.

25 Q. Okay. What did you do following your employment with

Koon - Direct

1 AWARE?

2 A. I had my own company for a short period of time and then  
3 opened an office in Nashville, Tennessee where I was located  
4 for Post, Buckley, Schuh & Jernigan.

5 Q. And with Post, Buckley, Schuh & Jernigan, what was your  
6 title?

7 A. Several titles. I was vice-president for most but not  
8 all the years I worked with them.

9 Q. Okay. From Post, Buckley, Schuh & Jernigan, where did  
10 you go?

11 A. To a company called Engineering-Science. It was owned by  
12 the Parsons Corporation at that time, and now it's been  
13 absorbed into the Parsons Corporation.

14 Q. You were with Parsons for a number of years?

15 A. Fifteen, I think.

16 Q. How many employees does Parsons have?

17 A. Usually 10,000 depending on what huge project they've won  
18 or finished or lost or whatever.

19 Q. And what was your title at Parsons?

20 A. I was vice-president at Parsons. I was also responsible  
21 for a group of practice leaders which are the technical -- the  
22 senior technical expertise in the environmental part of the  
23 company.

24 Q. And after you left Parsons, where did you work?

25 A. Malcolm Pirnie. Malcolm Pirnie at that time was about

Koon - Direct

1 1700 people specializing -- its business was all  
2 environmental, environmental engineering and science, working  
3 with municipalities, federal government, and industry on  
4 environmental issues.

5 Q. Where's Malcolm Pirnie located?

6 A. It's headquartered in White Plains, New York. I was in  
7 the office in Atlanta.

8 Q. Okay. And who is your current employer?

9 A. I have my own consulting company, John H. Koon &  
10 Associates.

11 Q. Is that based in Atlanta as well?

12 A. Based in Atlanta, yes.

13 Q. So how many years have you been working in the  
14 environmental engineering field?

15 A. I think it's 38.

16 Q. Has your work primarily focused on water issues or have  
17 you also worked on air issues?

18 A. It's principally -- my experience is principally in  
19 working with water issues as opposed to air or solid and  
20 hazardous waste, although I have some experience in those  
21 areas.

22 My experience is principally working with industrial  
23 clients, although I've worked with some other kinds of  
24 clients, and so it's principally been working with industrial  
25 clients, permitting and treating industrial wastewater

Koon - Direct

1 discharges.

2 Q. Do those industrial wastewaters include only processed  
3 wastewaters or do they also include a storm water element?

4 A. No, frequently there's a storm water element in with the  
5 industrial wastewaters, and sometimes it's storm water by  
6 itself, but yes.

7 Q. Have you also worked for municipalities?

8 A. Yes.

9 Q. And are those municipalities treating storm water or  
10 sewage treatment?

11 A. Most of the time storm water is a significant component  
12 of the wastewater that municipalities have to treat.

13 Q. Okay. How many projects over the course of your 38-year  
14 career do you think you've worked on?

15 A. You know, I can't remember. We were discussing that at  
16 lunch, and it's at least 300 different client sites. It may  
17 be as many as 500, but somewhere in that range.

18 Q. Okay. In your experience what are kind of some of the  
19 basic elements of an environmental engineering project for  
20 wastewater treatment?

21 A. Well, first, you're talking about as you proceed from  
22 idea or the definition of the need through to implementation?

23 Q. No, I'm sorry. I asked a terrible question. What are  
24 some of the -- in the system itself, the wastewater treatment  
25 system --

Koon - Direct

1 A. Sure.

2 Q. -- what sort of components are there? Starting at the  
3 beginning of the process, we've got the influent, and taking  
4 us to the outfall.

5 A. Sure. Generally, first you'll have equalization. In  
6 most all cases involving industrial wastewater, you'll have  
7 equalization of some kind. You might -- that might be  
8 followed with -- well, would be followed with what I'll call  
9 pretreatment, might be pH adjustment, might be chemical  
10 precipitation, might be chemical oxidation or reduction.

11 Then you would have probably what I'll call the process  
12 or processes that would be removing the principal constituents  
13 in the waste, the ones that are most important for meeting  
14 your permit. It might be biological treatment, which is --  
15 I've got experience at lots of places with biological  
16 treatment. I've got experience with lots of wastewaters  
17 containing nitrogen, including nitrate.

18 It might be a chemical treatment that would include  
19 chemical precipitation, oxidation reduction, etcetera, in  
20 metal finishing plants. It might be membrane processes,  
21 including reverse osmosis, and I have experience with all  
22 those type of unit processes.

23 Following that, you have to manage the residuals. The --  
24 could include sludges, could include concentrate from a  
25 membrane process, and I have experience with several processes

Koon - Direct

1 for managing residuals.

2 Q. Have you worked on all of the -- as I heard you, there  
3 were four elements; equalization, pretreatment, principal  
4 processes, or unit processes, and residuals management.

5 Have you in your career been involved in the design and  
6 implementation of each of those four elements?

7 A. Yes, I have.

8 Q. Have you also been involved in project management?

9 A. Yes, I have. That has not been the core of my work, but  
10 I certainly have managed projects.

11 Q. What has been the core of your work?

12 A. The core of my experience is in development and  
13 process -- development and process design, but especially in  
14 the years I was at Parsons, Parsons is a company that has  
15 professional project managers. So if you're a professional  
16 process development person, there's no way you can be a  
17 project manager. Those are just two different worlds. But  
18 I've participated in a lot of projects where I followed the  
19 project all the way through from conception to start-up,  
20 working at least to maintain the integrity of the process  
21 through the detail design and construction process.

22 Does that answer the question?

23 Q. I believe that it does. What's the smallest wastewater  
24 treatment system you've designed?

25 A. Wow, I generally don't remember them that way. A gallon

Koon - Direct

1 per minute.

2 Q. Okay.

3 A. I worked with a company to develop a recycle process, gas  
4 stations at interstate exits where there's no sewer and they  
5 can't qualify for septic tanks, and I worked with a company to  
6 develop a process for that. That was probably, over the  
7 average of a day, about a gallon per minute.

8 Q. What's the largest treatment system you've worked on?

9 A. It would be steel mills or pulp and paper mills that I've  
10 worked in, and probably 20 million gallons per day there, may  
11 have been a steel mill that did as much as 50 million gallons  
12 per day. Let's say 20 million gallons per day.

13 Q. Is twenty million gallons per day roughly thirteen or  
14 fourteen thousand gallons per minute?

15 A. I think so.

16 Q. Okay. As far as do you have experience working on large  
17 capital projects?

18 A. Yes.

19 Q. What do you understand the term "capital project" to  
20 mean?

21 A. Most industries have -- divide projects on which they  
22 spend money into two categories, put these projects in two  
23 piles. One are the small projects and one are the large  
24 projects. The large projects they typically call capital  
25 projects and typically have a separate group of people to



Koon - Direct

1 implement these projects because they're spending a lot of  
2 money, they're very important projects, and they're usually  
3 schedule-driven.

4 THE REPORTER: Did you say "schedule-driven"?

5 THE WITNESS: Schedule-driven, yes.

6 BY MR. TEANEY:

7 Q. What is the largest dollar value capital project that  
8 you've worked on?

9 A. There was one back in the '90s, probably the mid to late  
10 '90s, that I think was about sixty million dollars -- fifty to  
11 sixty million dollars then. What would that be today?  
12 Seventy or eighty million dollars, I think, maybe? I'm not  
13 sure. I think that was likely the largest one.

14 Q. Have you worked on several projects of that scale?

15 A. Slightly smaller than that. Yes, one a couple years ago  
16 that I think was \$60 million, one a couple of years before  
17 that that I think was in the 50-million-dollar range.

18 MR. TEANEY: Okay. At this time I would like to  
19 move to qualify Dr. Koon as an expert in wastewater treatment  
20 and environmental engineering based on his education and  
21 experience.

22 THE COURT: All right. You may proceed.

23 MR. TEANEY: Thank you, Your Honor.

24 BY MR. TEANEY:

25 Q. Dr. Koon, are you familiar with the term "first flush"?

Koon - Direct

1 A. Yes, I am.

2 Q. What do you understand first flush to mean in a  
3 wastewater treatment arena?

4 A. It's a term that people that work with storm water in  
5 urban areas typically have developed and used. If you've got  
6 a rainstorm outside here on the street, you'll have dirt that  
7 accumulates on the street, you'll have oil probably, some oily  
8 materials from cars. You may have to where somebody has  
9 spilled a cup of coffee that contains sugar and cream and so  
10 on. And the first rain that occurs from the storm generally  
11 carries the contaminants that have collected on the impervious  
12 pavement away with it.

13 Therefore, the first flush of the storm generally  
14 contains, I'll say, the lion's share -- can't be more specific  
15 than that -- of the contamination in storms.

16 Q. And this is typically used when there's impervious  
17 surfaces?

18 A. It's used more than that, but the example is most clear  
19 when it's impervious surfaces. It's typically used in  
20 municipal or urban settings.

21 Q. Before you were to apply that to a particular setting  
22 that doesn't have impervious surfaces, what kind of data would  
23 you need to understand if the use of first flush was  
24 appropriate?

25 A. You would need data that described how contaminants --

Koon - Direct

1 the presence of contaminants in the water with the progression  
2 of the storm. Does that make sense?

3 Q. It does. And you reviewed -- well, let me strike that.  
4 In preparation for your testimony today, what materials have  
5 you reviewed?

6 A. I've reviewed some reports written by CH2M Hill, reviewed  
7 some other reports associated with testing related to this  
8 process, reviewed a report -- one of the CH2M Hill reports was  
9 a watershed analysis, I believe, and that's not the exact  
10 words. Some were treatment reports, things of that nature, a  
11 couple of depositions.

12 Q. In your review have you seen any sort of data that would  
13 support the application of first flush to the Apogee Mine?

14 A. No, none.

15 Q. Okay. Can you draw an opinion about when that sort of  
16 data should have been gathered or should be gathered?

17 MR. HURNEY: Objection, Your Honor. It's a brand  
18 new opinion. We deposed --

19 THE REPORTER: I can't hear you.

20 THE COURT: Speak up. I can't hear you. Use the  
21 microphone.

22 MR. HURNEY: I apologize, Your Honor. I object.  
23 This is a brand new opinion. We deposed this expert last  
24 Friday. We asked for his opinions. We have worked with the  
25 other counsel to be a little less formal than reports in this

Koon - Direct

1 case, but certainly he listed six or seven things he expected  
2 to testify, and this is not one of them.

3 THE COURT: All right.

4 MR. TEANEY: I do not dispute Mr. Hurney's  
5 representation. We were treating this largely as rebuttal for  
6 some of the testimony and evidence that came in in this  
7 morning's testimony that was somewhat unanticipated from  
8 Mr. McHale about the concentrate -- Mr. McHale's testimony  
9 regarding his opinion regarding whether or not the storm  
10 waters or storm flows would have large concentrations of  
11 selenium.

12 THE COURT: Well, Mr. McHale didn't offer any expert  
13 opinions about the connection between increased flows and all  
14 that. He indicated it was his opinion that -- he also, I  
15 think, pretty clearly testified that it was more of just his  
16 understanding, not an expert opinion. So I don't think that  
17 it's a subject for rebuttal.

18 MR. TEANEY: Understood. I will not pursue this  
19 line of questioning any further.

20 THE COURT: Okay.

21 BY MR. TEANEY:

22 Q. Dr. Koon, have you visited the Apogee site that has been  
23 the subject of these proceedings?

24 A. Yes, I have.

25 Q. Do you recall when you visited that site?

Koon - Direct

1 A. I think it was July 2, 2010.

2 Q. Did you visit three outfalls at that site?

3 A. Yes, I did.

4 Q. Okay. I want to talk to you a little bit about what you  
5 saw at each outfall.

6 A. Sure.

7 Q. And let's start at the Titanic site, which is commonly  
8 called Outfall 003. Was there a treatment system or some  
9 mechanism for selenium reduction present at the Titanic site?

10 A. There was a ZVI system present at the site.

11 MR. TEANEY: I'd like to use an exhibit. This was  
12 on the list and identified as Plaintiff's Unique Exhibit 5.  
13 It has not previously been provided to the Court, although it  
14 was provided to defendants in discovery. The delay was  
15 because of the production of color copies.

16 THE COURT: All right.

17 MR. TEANEY: May I?

18 THE COURT: Yes.

19 MR. TEANEY: So this should be marked -- it's not  
20 yet marked. It should be marked as Plaintiff's 5.

21 THE COURT: All right. You may tender it to the  
22 clerk and it may be marked.

23 MR. TEANEY: Thank you. I have a copy for the  
24 Court, if it please the Court.

25 THE COURT: Thank you.

Koon - Direct

1 BY MR. TEANEY:

2 Q. Dr. Koon, did you take pictures on your site visit to the  
3 Apogee Mine?

4 A. Yes, I did.

5 Q. Do you recognize the first page here that's Bates  
6 numbered OVEC04652 as one of the pictures that you took?

7 A. Yes, that's correct.

8 Q. Okay. What is this picture of?

9 A. That's of the -- some of the tanks that comprise the ZVI  
10 system that was at the Titanic. I believe that was the  
11 Titanic site. I'm pretty sure it was.

12 Q. What does the staining on the side of that tank represent  
13 to you?

14 A. Based on what I understand about the composition of the  
15 wastewater and this treatment process, I suspect that that's  
16 staining from iron, iron oxide, rust.

17 Q. Would that be from the overflow?

18 A. That's a good question. Why would it be on the outside  
19 of the tanks? And I assume that it's from tank overflows.  
20 And, in fact, some of the documents I've read have indicated  
21 that the tanks did plug and overflow.

22 Q. Would overflow be something you would expect out of a  
23 functioning treatment system?

24 A. It shouldn't be, no. And if it did occur, you would  
25 expect it to be curbed to pick up that overflow and to

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1 re-treat it, and it looks to me like there's been overflows  
2 there, and I saw nothing in the way of curbs or dikes to keep  
3 any spilled wastewater from escaping from the treatment area.

4 Q. Okay. What is your understanding of how many tanks are  
5 at the Titanic site?

6 A. At that time, I think there were twenty-one; seven trains  
7 of three tanks each. Three tanks in series, seven trains.

8 Q. Okay. I want to direct your attention several pages in.  
9 It's Bates numbered photograph OVEC04658.

10 A. Yes.

11 Q. What is this a picture of?

12 A. That's a picture of a penetration at the bottom of one of  
13 the tanks on the right side. Then there's a valve and then  
14 there is -- looks like a T in the line where one corrugated  
15 plastic pipe comes off the top of the T, and it looks like it  
16 goes into another black pipe, then through the -- straight  
17 through the T to the left.

18 Q. Do you know if this is an upflow system or a bottom flow  
19 system?

20 A. I think these were upflow systems. Some of them were. I  
21 believe -- I believe it was.

22 Q. Okay. So this would be the input to one of those --

23 A. Yes.

24 Q. -- tanks that we're looking at?

25 A. That's right.

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1 Q. How do you think a system like this would perform in  
2 freezing weather?

3 A. You know, no provisions for freeze protection, and you  
4 have real winters here in West Virginia I know, and no freeze  
5 protection that I could see certainly on the pipes or valves  
6 and none on the reactors, the tanks. In fact, there have  
7 been -- some of the documents I read indicated there were  
8 problems with freezing during winter months.

9 Q. Does this -- can you draw any other conclusions or have  
10 any other opinions based on what you see in this photograph?

11 A. There is -- you can see rust stains on the tank to the  
12 right. You can see some rust-colored stains around the piping  
13 and valve. And I don't know if that indicates leaks or not.  
14 If it's not leaks, I don't know how they -- how they got  
15 there.

16 Q. Okay. I'd like to direct your attention to several more  
17 pages in to the photo that is Bates numbered OVEC04661.

18 A. Okay.

19 Q. Have you found that?

20 A. Yes.

21 Q. Do you recognize this photo?

22 A. Yes.

23 Q. What is this a photograph of?

24 A. This is also at Titanic. As I recall, it shows the lower  
25 pond at Titanic and the side of -- it shows in the foreground



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1 is where the reactors were located. The first part of the  
2 pond I believe is the part that was sectioned off with a  
3 curtain, and then there's another curtain and then the main  
4 part of the pond. And off in the distance is, I believe, the  
5 overflow, if I've got my orientation here right, down into a  
6 creek.

7 Q. Could this one, instead of an overflow, could it have a  
8 corrugated pipe for an outfall?

9 A. Yes, maybe it did.

10 Q. Okay. What is your understanding of why these curtains  
11 are there?

12 A. Iron is solubilized during the ZVI process. It comes out  
13 in the effluent. And in many cases -- in this case for sure,  
14 since there is an effluent limit on iron in the site's permit,  
15 that would likely have to be removed or reduced in order to  
16 meet the permit conditions. I think this was an area where  
17 they hoped that iron would settle staying in the pond and not  
18 being in the effluent.

19 Q. What is your understanding of the gallons per minute that  
20 this 21-tank system will treat?

21 A. Fifty-six gallons per minute I think is what was quoted.  
22 Eight gallons per minute through each of the seven trains.

23 Q. Okay. Fifty-six gallons per minute?

24 A. Fifty-six gallons per minute.

25 Q. What is your understanding based on the CH2M Hill

Koon - Direct

1 watershed flow report you said you reviewed is the average  
2 flow at the Titanic site?

3 A. Wow, I think the average flow is 100 or 105 gallons per  
4 minute stated differently in two places.

5 Q. Okay. Is this then a full-scale treatment system?

6 A. It might be what they consider -- what they would supply  
7 for a full-scale treatment system, but it certainly wasn't  
8 treating all the -- isn't treating all the flow coming through  
9 this site.

10 Q. Do you mean it could be a full-scale system at a site  
11 that had a flow of -- an average flow of less than 100 gallons  
12 per minute?

13 A. It could be a full-scale system for 100 gallons per  
14 minute if they supplied enough tanks. I think this is their  
15 standard design, the way I understand it, but I'm not sure.  
16 You see the difference? Maybe it was a distinction I didn't  
17 need to make. I don't -- no, this is not treating all the  
18 flow from the site.

19 Q. Okay. Have you reviewed performance data from the tanks  
20 at the Titanic site?

21 A. Yes.

22 Q. Do those data show that the system is consistently  
23 removing selenium below 5 parts per billion?

24 A. Not consistently.

25 Q. What conclusions can you draw from the Titanic data that

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1 you have reviewed?

2 A. To put it succinctly, I have not seen evidence that  
3 Titanic has consistently met -- produced effluent selenium  
4 limits that complied with the permit.

5 Q. Okay.

6 THE COURT: Well, could you explain that in a little  
7 more detail? What do you mean by "consistently"?

8 THE WITNESS: If you take the data from the ABMet  
9 and the FBR process and the RO process, VSEP, those got down  
10 below the 4.7 micrograms per liter and pretty much stayed  
11 there, and I don't recall any blips of data above that. Once  
12 they got stabilized, they pretty consistently achieved it.

13 THE COURT: And how would you then distinguish what  
14 you found from the data on this system?

15 THE WITNESS: First of all, I think the only data  
16 I've seen from this system is an Excel or a print of an Excel  
17 spreadsheet. There's been no evaluation, no analysis of this  
18 data that I recall. I may be -- there were some sporadic  
19 analyses of some of the other ZVI data, but I don't believe  
20 there was any speaking directly of Titanic. I certainly have  
21 not seen a report that said, "Under these conditions, we  
22 consistently meet the 4.7 microgram-per-liter limit.  
23 Therefore, this is how the system needs to be designed using  
24 ZVI to be appropriate to this treatment application."

25 THE COURT: What did the spreadsheet data indicate

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1 to you in regard to how frequently or infrequently, however  
2 you characterize it, the degree to which it was effective?

3 THE WITNESS: As I recall, there may have been a  
4 couple-of-week period when it was below 4.7 but other periods  
5 when it was clearly mostly above 4.7.

6 THE COURT: And by "other periods," are you telling  
7 me that as you looked at the sampling taken and the reports  
8 based on that sampling, it would be over 5 for a period of  
9 days or --

10 THE WITNESS: Yes, that's my recollection.

11 THE COURT: All right.

12 THE WITNESS: Now, I'm stretching here because I've  
13 seen so many numbers. Perhaps the data -- no, I think one  
14 period of the data that was not below 4.7 was in January or  
15 February, maybe early March. And temperature is a significant  
16 consideration here. And I see no way in these designs to  
17 manage the temperature such if the temperature is the reason  
18 that it was out of compliance, I see nothing in these designs,  
19 nothing in these systems to permit them to operate during the  
20 winter months and meet that limit. I see very little  
21 engineering in them.

22 BY MR. TEANEY:

23 Q. Dr. Koon, did I understand you to say you haven't seen a  
24 report analyzing the performance of the Titanic system?

25 A. I believe that's correct.

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1 Q. Okay.

2 A. I'll make an overview statement, that I haven't --  
3 although I've seen at least a progress report and another  
4 report that may have been a final report over part of this  
5 time, I've seen nothing that does the depth of analysis of  
6 this data for a system that I and Patriot people have  
7 classified as an emerging technology required to bring that to  
8 full-scale design anytime soon.

9 Q. And by emerging technology, you're referring to ZVI?

10 A. Yes. Yes.

11 Q. Have you seen -- did you see the FBR pilot proposal or  
12 the guide on how to perform the FBR pilot?

13 A. The work plan?

14 Q. Yeah, the work plan.

15 A. Yes, I did.

16 Q. Did you see the final FBR pilot report?

17 A. Yes, I did.

18 Q. Have you seen any comparable documents for ZVI analyzing  
19 them or talking about the work plan?

20 A. No. In fact, I recall seeing in a deposition that  
21 Mr. Constant of Patriot was asked if he had plans, a work  
22 plan, a monitoring plan, evaluations of the results, and I  
23 think, as I recall, he said no, he didn't --

24 Q. Okay.

25 A. -- for at least most of them, of the questions, specific

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1 questions.

2 Q. I want to turn your attention to a couple of pages  
3 later -- actually, several pages later. This series is  
4 starting at OVEC04670.

5 A. Is that the right one? (Indicating)

6 Q. No. We're trying to move on to the Mud Lick site.

7 A. Excuse me?

8 Q. We're trying to move to the Mud Lick site, looking at the  
9 picture of the blue totes.

10 THE COURT: 4670.

11 BY MR. TEANEY:

12 Q. 4670.

13 A. Oh, 70, yes.

14 Q. Have you located that page, Dr. Koon?

15 A. Yes, uh-huh.

16 Q. Okay. What is this a picture of?

17 A. This is a picture of the ZVI system installed at the  
18 Mud Lick site.

19 Q. What are those blips in the photo there?

20 A. That's interesting. I didn't realize that until I got  
21 the pictures back, and I didn't think I was that good of a  
22 photographer, but those are, as I recall, water droplets that  
23 are suspended in mid air and the droplets coming from  
24 overflows from the system. And I don't know where the one on  
25 the bottom is, but the one on the top I'm pretty sure comes

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1 out the straight side of the T on this one reactor.

2 So these reactors -- the flow into these reactors were  
3 burping. Flow would come down into the reactor through this  
4 piping system and every once in a while would burp and send  
5 water out of the top of the T which is meant as a vent.

6 Q. What conclusion can you draw from witnessing that  
7 burping?

8 A. That whoever put together the piping system for the  
9 influent wastewater really didn't spend much time on it,  
10 perhaps didn't have the background to properly or  
11 hydraulically design that system.

12 Q. Okay. Where does that water go after it burps out?

13 A. Went out on the ground. And, again, there was no berm,  
14 no dikes around it to collect spills, which you would expect  
15 in a properly designed system and probably even in a pilot  
16 system. And I'm not sure if this is a pilot system or full-  
17 scale system. I was a little bit confused on that.

18 Q. Well, let's talk a bit about that. How many of these --  
19 let me see if there's a picture that better represents it. I  
20 don't know that we've got a picture of the whole system.

21 Actually, if you turn to 4674. I promise, Mr. Gardner, I'm  
22 not using this photograph because of your presence in it.

23 If you look at 4674, does that show the entire blue tote  
24 system there at Mud Lick?

25 A. I believe it does, eight totes or reactors, yes.

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1 Q. And I can't remember if we got this on the record. And  
2 this system is located at Outfall 2; is that correct?

3 A. That's correct.

4 Q. Okay. What is your understanding of the flow that these  
5 eight reactors are designed to treat?

6 A. I think it's 5 gallons per minute.

7 Q. And so if you have eight totes, are they treating,  
8 effectively, 40 gallons per minute?

9 A. That's what you would expect, yes.

10 Q. If you recall from the CH2M Hill watershed flow, what did  
11 they estimate the average flow to be at Mud Lick?

12 A. I think the average there is 400 gallons per minute.

13 Q. So this at its maximum would treat one-tenth of the flow  
14 at Mud Lick?

15 A. Ten percent of the average flow, yes.

16 Q. Now, what about -- I know CH2 looked at the first flush  
17 from a 25-year storm, didn't they, in that watershed flow  
18 analysis?

19 A. If you want to call it that, yes.

20 Q. And what was the design max, I think they may have  
21 called, for Mud Lick, if you recall?

22 A. Mud Lick, as I recall, was 800 gallons per minute.

23 Q. So 40 gallons per minute is about one-fifth, then, of the  
24 design flow that CH2 recommended.

25 A. No.



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1 Q. No?

2 A. Forty over eight hundred would be four over eighty or one  
3 over -- five percent.

4 Q. Five. Thank you.

5 A. Five percent.

6 Q. I put the five on the bottom and assumed it was --

7 A. Shall I go get my calculator?

8 Q. No. Never allow a lawyer to do math, or at least this  
9 lawyer. I apologize for giving the reputation of others in  
10 the courtroom.

11 Okay. What is your understanding of where the influent  
12 for this system was coming?

13 A. I thought these were upflow also, but looking at this, I  
14 think they're downflow. This has been switched back and forth  
15 some to overcome problems of air binding, of plugging,  
16 etcetera.

17 Q. What do you mean by "air binding"?

18 A. I think it was in the Mud Lick totes, but I'm not  
19 entirely sure of that, where there was experienced an  
20 inability to get the desired flow through each reactor, and I  
21 think they determined that it was due to air binding, a  
22 collection of air bubbles in the foam media. And as the air  
23 bubbles collect, they form a resistance to flow going through  
24 the system.

25 Q. What effect would air binding have on the performance of

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1 something?

2 A. Well, it would reduce the surface area of iron filings  
3 that the waste flow containing the selenium and the nitrates  
4 and etcetera and the dissolved oxygen would come into contact  
5 with. So it reduces the efficiency of the system.

6 Q. Okay. Where did the effluent from this tote system go,  
7 if you recall?

8 A. As I recall, it went also into a pond.

9 Q. Okay. If you'd turn the page to Bates number OVEC04675.

10 A. Yes, sir.

11 Q. Can you identify what that is a photograph of?

12 A. That is a collection of pipes. Should be eight of them  
13 there, and there are, one from each reactor, and that is the  
14 discharge flow from each reactor. That is their flow  
15 monitoring system, flow control and -- well, flow monitoring  
16 system.

17 Q. That's a flow monitoring system?

18 A. That's what I understand, yes.

19 Q. Okay. Is it discolored, to your recollection?

20 A. Well, the picture shows it to be discolored, the same  
21 rust color that's been in some of the previous pictures. And  
22 you would expect that, again, to be some of the iron that's in  
23 the effluent from the system.

24 Q. What if you were to add acid to the influent before it  
25 went into the ZVI? Would that increase the iron discharge, if

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1 you know?

2 A. I think it might. If you add a lot of acid, certainly it  
3 would. It could dissolve it, yes.

4 Q. Let me clarify. If you were to add acid for the purpose  
5 of lowering the pH of the influent water --

6 A. Right.

7 Q. -- do you think that that would increase the amount of  
8 iron that's discharged from the systems?

9 A. I think the optimum pH for ZVI is at a pH of, I'll say, 5  
10 to 7, but I'm not sure of it. It's on the acid side of  
11 neutral, and that's the acid side of neutral. And to the  
12 extent that that accelerates the reactions of the reduction  
13 reactions with the iron, yes, it would result in more iron in  
14 the effluent.

15 Q. Okay. Have you reviewed data from the Mud Lick blue tote  
16 system?

17 A. Yes, I did.

18 Q. Did it -- what opinions did you draw from the review of  
19 that data?

20 A. Well, my -- I don't expect to have to go into the  
21 detailed data, do the evaluation and make the conclusions from  
22 this. I consider that the responsibility of the owner. I did  
23 not see those evaluations itself. I saw collections of data  
24 in a couple of places, and I think it was for the Hobet site.  
25 I saw a progress report and another report that may have been

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1 a final report for one phase.

2 So not seeing -- I did not do the evaluations of the  
3 data. I did peruse the data and looked mostly at effluent  
4 selenium, and that's as far as I -- I just didn't see it was  
5 my responsibility to go further.

6 Q. So you didn't see any reports on the performance of this  
7 as if it were a pilot system.

8 A. As I recall for all three of these, there were times that  
9 the effluent selenium was less than 4.7 micrograms per liter  
10 and many other times -- and I think easily the majority of the  
11 days for which data was reported, that the effluent was  
12 greater than 4.7.

13 I could not easily enough see a long enough performance  
14 period when I saw it less than 4.7 that might merit me looking  
15 further to see if I could figure out what conditions  
16 accompanied the better performance.

17 Q. Dr. Koon, did I understand you to say that you were a bit  
18 confused about this system as to its purpose?

19 A. Yes.

20 Q. Can you elaborate on that?

21 A. You could look at the systems and see that they weren't  
22 treating all the flow coming down each of these discharges.

23 And if that's the case, then are they full-scale systems?

24 Well, they're -- and are they designed as a permanent  
25 solution? And it didn't really look as though that was the

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1 case. The one at Titanic was treating perhaps -- well, most  
2 of the flow coming down there, but there were some other flows  
3 that I saw going around it.

4 So it's not a -- I didn't see it as a permanent solution  
5 and certainly it wasn't designed as a permanent solution,  
6 didn't have the apparent -- the unit processes, the piping,  
7 etcetera, didn't have the appearance of a permanent solution.

8 So you think, well, is this an experimental system?

9 Well, there were lots of reactors out there for it to be an  
10 experimental system. On a pilot system you like to identify  
11 your objectives, say this is what we need to learn here and  
12 put a few reactors in to operate it, let's say a couple or  
13 three different conditions, and collect good data for those  
14 conditions, and yet we had more reactors than that.

15 You usually would have some test equipment around to be  
16 able to do field tests, because this is a field operation. I  
17 didn't see any of that. Maybe that was contained in a truck  
18 that was brought to the site. And it just didn't have the  
19 appearance of a well-designed pilot system from which you  
20 would collect -- consistently collect data.

21 Q. Was there any --

22 A. I didn't know what -- wasn't sure what the purpose of  
23 this was. Now, I didn't ask for a work plan or a monitoring  
24 plan from the gentleman that showed us around the site.

25 Later, though, in Mr. Constant's deposition, he stated that

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1 there was no work plan, that there was no monitoring plan.

2 And so I figured, well, that's consistent with the trouble I  
3 had figuring out why these systems are here.

4 Q. Okay. Is there anything in between a pilot and a full-  
5 scale treatment system that this could be speciated as?

6 A. Once in a while you will see people with a demonstration-  
7 scale system, which is, "We're pretty sure this is what we  
8 want to design to solve this problem. So let's put it in and  
9 let's operate it probably at one condition for an extended  
10 period of time to make sure that we're okay."

11 Well, people do that only when they've got time in their  
12 schedule to do this. It takes frequently a year. In my  
13 opinion, there is not time for a demonstration schedule here  
14 given the other schedule drivers, and this didn't look like a  
15 demonstration-scale system either.

16 Q. Would you expect to see the same type of accouterments to  
17 a demonstrative or demonstration scale that you would with a  
18 pilot scale, the same kind of field sampling and --

19 A. Demonstration scales frequently are big enough that  
20 you'll have an operations building --

21 Q. Okay.

22 A. -- and have operators on-site and so on. So maybe you'd  
23 have a little more permanent look than a pilot-scale system.

24 Q. I want to now use photographs from Slab Fork.

25 Unfortunately, these -- you took some fine photographs of

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1 Slab Fork, but I don't have them with me. So I'm using some  
2 that were provided by defendant in discovery. I guess these  
3 have not been provided to the Court previously. I guess we'll  
4 need to label them as Plaintiff's 61. I believe that's where  
5 we were on the list.

6 May I approach, Your Honor?

7 THE COURT: All right. You may.

8 BY MR. TEANEY:

9 Q. Dr. Koon, in your site visit did you visit the Slab Fork  
10 site?

11 A. Yes.

12 Q. Is it your understanding that that's what's commonly  
13 referred to as Outfall 001 on the Apogee permit?

14 A. Yes.

15 Q. Do you recognize what's depicted in these photographs? I  
16 guess we have three pictures here.

17 A. Yes.

18 Q. Can you describe what this is?

19 A. I believe the configuration here is six tanks like shown  
20 in the first photograph in parallel. So they're operating --  
21 the flow comes into one tank, goes out of that tank, goes into  
22 the discharge pond.

23 Q. Did Jim Constant accompany you on your site visit?

24 A. Jim Constant?

25 Q. Yes.

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1 A. I don't believe he was the fellow that was there. Is  
2 that correct?

3 Q. I don't know that you're permitted to ask questions.

4 A. Excuse me. He was the environmental manager for that --  
5 for the Apogee's site, I believe, or the Ruffner site.

6 Q. I hope that they'll stipulate that actually Jim Constant  
7 did accompany you on your visit.

8 A. Oh, is that right?

9 Q. Yeah.

10 A. Okay.

11 Q. But whoever did accompany you, did they tell you how many  
12 gallons per minute each of these tanks was treating?

13 A. As I recall, this one was one to two gallons per minute.

14 Q. One to two gallons per minute per tank?

15 A. Yes, I think so.

16 Q. And so how many tanks were there?

17 A. Six.

18 Q. Again, I'm doing math, which is a dangerous thing.  
19 Twelve gallons per minute?

20 A. Twelve gallons a minute let's say, yes.

21 Q. Okay. Do you recall what the average flow, according to  
22 CH2M Hill, is at Slab Fork?

23 A. I think 1600 gallons per minute.

24 Q. So this system will treat less than one-hundredth -- less  
25 than one one-hundredth of the average flow?



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1 A. That's as I understand it, yes.

2 Q. What was the design max flow that CH2M Hill had in their  
3 watershed flow?

4 A. For this outfall, it was 4000 gallons per minute.

5 Q. So they are treating, if this were on the design max,  
6 12 gallons per minute out of a potential 4000 gallons per  
7 minute?

8 A. About a quarter of a percent, I think.

9 Q. What would be the purpose of installing something that  
10 would treat a quarter of a percent?

11 A. I can't -- I can't say. I can't defend it.

12 Q. Would that have any appreciable effect on the selenium  
13 discharge from Slab Fork?

14 A. I doubt it. I can't see how it would. I can't see how  
15 it possibly would.

16 Q. Have you seen any reports about the performance of these  
17 six tanks?

18 A. Yes, I have.

19 Q. Did you see reports, or were they data spreadsheets?

20 A. Just spreadsheets, as I recall.

21 Q. Okay. And do you recall -- what conclusion did you draw  
22 from those spreadsheets?

23 A. The same as the others. I could draw no conclusions  
24 because the data had not been properly correlated.

25 Q. Did you look at the selenium effluent from the tanks in

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1 the data?

2 A. Yes.

3 Q. Did it consistently remove below 5 parts per billion?

4 A. Not that I recall.

5 Q. Okay.

6 A. I'm pretty sure it didn't. Can I also make another  
7 comment on this picture?

8 Q. Please. Do you have an additional comment on the picture  
9 you would like to make?

10 A. Yes. You can see the corrugated plastic piping that goes  
11 from the header pipe over to the reactors, and you can see  
12 a -- that it goes up in the air. It's bowed.

13 Q. Uh-huh.

14 A. One thing that even -- even if this were a pilot system,  
15 the design ought to, if it's designed in a deliberate manner  
16 by good designers, ought to pay some attention to safety.

17 Here we have pipes going all around the ground, no  
18 attempt to put steps over the pipes to prevent people from  
19 tripping on them and falling. And where these are bowed up in  
20 the air like that is a perfect place for somebody to -- say  
21 you're carrying a glass beaker with a sample in it. You hit  
22 that, you trip, break that and break the glass into your  
23 chest.

24 People just -- you know, if it's well-designed, there's  
25 just a few easy indications of how little design and little

Koon - Direct

1 thought I think went into this system in all three of these.

2 Q. Thank you, Dr. Koon. Do you have any other opinions  
3 based on your site visit to the Apogee site that we haven't  
4 discussed?

5 A. I think that's all I recall.

6 Q. Okay. Have you had a -- you'd mentioned earlier about  
7 some of the items that you reviewed in preparation for your  
8 testimony. Did you review the pilot report for FBR?

9 A. Yes, I did.

10 Q. Did you review the pilot reports and studies regarding  
11 the VSEP technology?

12 A. Yes.

13 Q. Did you review the ABMet pilot study report?

14 A. Yes.

15 Q. Did you review the June 2010 NAMC selenium literature  
16 review report?

17 A. Yes.

18 Q. Okay. I'm going to ask you about your opinions on the  
19 various technologies that might be available to Patriot.  
20 What's your opinion about the viability of -- well, we'll  
21 start with biological treatment in the form of ABMet.

22 Do you have an opinion on whether that's a viable and  
23 technically feasible technology?

24 A. I believe that that's why -- a viable and technically  
25 feasible for this -- for these applications.

Koon - Direct

1 Q. And what's that opinion based on?

2 A. It's based on the results of the pilot plant. The system  
3 got started and consistently, after it got acclimated,  
4 consistently produced an effluent containing less than 4.7  
5 micrograms per liter selenium.

6 There are several applications, full-scale applications  
7 of this process that have been working for I'll say several  
8 years. The earliest example I've seen of it treating -- there  
9 are other full-scale and pilot-scale examples reported that  
10 produce effluents less than 4.7 micrograms per liter,  
11 admittedly on different waste streams, but taking selenium and  
12 reducing it to less than the permit limit here.

13 Q. And where did you learn about those other applications?

14 A. I've got some other papers. CH2M Hill's literature of a  
15 technology review was a very good review of that, and I think  
16 there were at least four reports there backed up by the  
17 references, reports of the ABMet process producing effluents  
18 less than 4.7 micrograms per liter for I'll say extended  
19 periods of time. And I think they've probably used that or  
20 very similar language.

21 Q. Is it your understanding that the ABMet pilot was based  
22 on about three gallons per minute?

23 A. Something small like that, yes.

24 Q. Is it usual for a pilot to be a small percentage of the  
25 ultimate flow --

Koon - Direct

1 A. Yes.

2 Q. -- that's to be treated?

3 A. Sure.

4 Q. Do you run into in your experience -- strike that. When  
5 you scale up, are you normally scaling up based on the results  
6 of a pilot like that?

7 A. You don't always have pilot plants to design from, but  
8 where you have them, yes, you use the pilot results to design  
9 the full-scale system.

10 Q. Okay. The other biological treatment that's been  
11 discussed in this matter so far is FBR. What is FBR?

12 A. Fluidized bed reactor.

13 Q. Have you used FBRs in your 38-year career?

14 A. Yes.

15 Q. And this is a biological reactor; is that correct?

16 A. This is a biological system applied to an FBR  
17 configuration, yes.

18 Q. Have you used biological systems in your career?

19 A. Oh, many times, yes.

20 Q. Is that a mature technology?

21 A. Absolutely, yes --

22 Q. What, if any --

23 A. -- as is denitrification in biological systems.

24 Q. What is denitrification and how would that relate to the  
25 FBR?

Koon - Direct

1 A. Denitrification is the biological reduction of nitrate to  
2 nitrogen gas or nitrate or nitrite, typically nitrate, to  
3 nitrogen gas. The reduction of selenium from the selenite and  
4 selenate ions, which also nitrate contains oxygen, and the  
5 bugs, the microbes, if you will, in the biological system use  
6 nitrate as a source of oxygen. So they basically take the  
7 oxygen off the nitrate and turn the nitrogen loose as nitrogen  
8 gas. It's a little more complicated than that, but that's  
9 basically it.

10 They do the same thing with selenium, except, of course,  
11 selenium doesn't go off as -- they take the oxygen from the  
12 selenite, which is selenium with three oxygens, or selenate,  
13 which is selenium with four oxygens. They take that oxygen,  
14 they use it just like you and I would, and throw off the  
15 selenium, which goes off as elemental selenium and becomes  
16 incorporated in the biological cell mass.

17 Q. Are those elements, nitrates and selenates, are those  
18 referred to sometimes as oxygen donors to the microbe?

19 A. Yes.

20 Q. Okay. Why do folks want to denitrify their wastewater?

21 A. In an increasing number of places dischargers are having  
22 to remove nitrogen from their waste. It's becoming a more  
23 significant problem. From municipalities, from cities, for  
24 sure there are lots of places that now have to take nitrogen  
25 out of the waste.

Koon - Direct

1 I also did a lot of work at a nitroparaffins plant that  
2 had a high nitrate wastewater, and we designed a system to  
3 remove the nitrogen in the form of nitrate from that waste by  
4 a similar process, biological denitrification.

5 Q. And you reviewed the FBR pilot work plan and the report  
6 of the results; is that correct?

7 A. That's correct.

8 Q. And what conclusions have you drawn based on that review?

9 A. I think the FBR -- it's my opinion that the FBR can  
10 successfully be applied to reduce the selenium in these  
11 applications to meet the permit limits.

12 Q. Okay. I want to talk a little bit about membrane  
13 technology. Have you used reverse osmosis in your career?

14 A. Yes, I have.

15 Q. What purposes have you put reverse osmosis to?

16 A. Both of them that I recall were treating biologically  
17 treated industrial wastewaters to remove dissolved solids and  
18 principally low concentrations of metals that were required  
19 for the discharge of the wastewater to the environment.

20 Q. This wasn't desalinization?

21 A. No.

22 Q. No?

23 A. No.

24 Q. So RO is --

25 A. It did take salt out of the water, but it was --

Koon - Direct

1 desalinization is usually referred to as taking a brackish or  
2 ocean water and producing drinking water. No, it didn't do  
3 that.

4 Q. So reverse osmosis membranes are used for other purposes  
5 besides production of -- besides desalinization or production  
6 of drinking water?

7 A. Yes.

8 Q. Do you have an opinion about whether reverse osmosis is  
9 technically feasible for application at the Apogee site?

10 A. Yes. My opinion is it's technically feasible also.

11 Q. To reduce below 5 parts per billion?

12 A. To reduce selenium below 4.7.

13 Q. 4.7.

14 A. Yes.

15 Q. Thank you. What about the -- did you review the VSEP  
16 reports?

17 A. Yes, I did.

18 Q. What conclusions or opinions did you draw based on the  
19 reports of the VSEP technology?

20 A. I think it looks like it -- that VSEP would work. I  
21 think CH2M Hill had some good comments, that there's some flux  
22 issues that need to be addressed. CH2M Hill observed through  
23 a fairly detailed analysis that the flux -- reduced the  
24 fluxes, the amount of permeate that goes through a given area  
25 of the membrane surface, gallons per minute per square foot,



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1 say. I think the flux reduces if the membranes are fouled,  
2 and I think more attention needs to be given with membrane  
3 fouling there.

4 They also observed a trend in the increase of selenium  
5 through the course of those tests, although, as I recall, even  
6 at the end of the test, I think the selenium was still under  
7 4.7 micrograms per liter but was increasing.

8 So I think that you could apply VSEP to these  
9 applications, but I think you probably should take the VSEP  
10 folks and the CH2M Hill folks and lock them in a room for a  
11 couple of days and say, "Go discuss the problems that are  
12 there and solve them," and they could do that easily with  
13 pretreatment.

14 Q. Even assuming it would be reasonable or rational to do  
15 that with that group of folks, why do you suggest that -- do  
16 you perceive a difference between the way that CH2 approached  
17 the pilot and the way that the folks at New Logic did?

18 A. Yes, and I think that's inherent in the way that  
19 technology vendors operate and the way that consultants  
20 operate.

21 Q. Can you elaborate on that?

22 A. I think vendors, if they are not guided and if you don't  
23 tell them, "These are the objectives of these tests, let's  
24 develop a work plan to see how we'll meet my objectives," I  
25 think they tend to come in, hook a pilot system up and run it,

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1 meet the 4.7 microgram-per-liter selenium objective in this  
2 case and say, "Hey, look, we've done it. We're out of here.  
3 We're going to the next job."

4 I think consultants tend to deliberate over issues more,  
5 give issues more scientific evaluation and analysis. And so  
6 it's not surprising that CH2M Hill did that with the VSEP data  
7 and found some issues that VSEP had not identified.

8 Q. Nonetheless, you believe that VSEP --

9 A. And so you throw them together in the same room and you  
10 take advantage of the entrepreneurial spirit and the "Let's  
11 get it done attitude" of the vendor and the "Wait a minute,  
12 we've still got some more questions, we need to look at a  
13 little more data" of the consultant, and you come out with a  
14 good product.

15 Q. So you think the result of that would be a technically  
16 feasible system?

17 A. I think, yes. Yes.

18 Q. I'm going to move on and talk a little bit about  
19 scheduling and timing of projects. In the course of your  
20 career have you designed schedules for the implementation, for  
21 the design and construction of wastewater treatment systems?

22 A. Yes.

23 Q. How frequently is that part of what you do?

24 A. Oh, every time -- virtually every time you have a project  
25 which will result -- needs to result in the construction of a

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1 wastewater treatment system, you have a schedule. A schedule  
2 can be very detailed, depending on the size, but for any  
3 decent size system, the schedule of when you begin design and  
4 construction will likely be several pages, getting down to  
5 fairly great detail.

6 Q. In your preparation for today's testimony and your review  
7 of the materials, did you ever see a schedule -- strike that.

8 Have you ever seen a schedule for the implementation of  
9 ZVI to achieve compliance by a certain deadline?

10 A. No.

11 Q. Did you see that for reverse osmosis?

12 A. No.

13 Q. Did you see that for ABMet?

14 A. No. Oh --

15 Q. ABMet?

16 A. Yes.

17 Q. You did? There was a schedule? What schedule was that?

18 A. Oh, excuse me. Not ABMet. I'm sorry. No, I have not.

19 Q. Okay. Have you operated where your clients have given  
20 you a very tight timeline or deadline to comply?

21 A. Yes.

22 Q. What are some of the reasons they've given you such  
23 deadlines, if you could give just a couple of examples?

24 A. Sure. One common one is, "We're building a new  
25 production facility here. It's going to be finished and in

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1 operation by this date. We must have our environmental  
2 control facilities selected, designed, constructed, and  
3 started up so that it doesn't delay the start-up of this  
4 production facility."

5 Q. What happens --

6 A. Very important.

7 Q. What happens if the delay of the production facility --  
8 or what happens if the start-up of that facility is delayed?

9 A. The start-up of the production facility is delayed  
10 because you can't start making product until you can control  
11 the environmental -- until you can control your environmental  
12 issues.

13 Q. And the company can't make money, and so that's --

14 A. That's right. In fact, on some occasions the project  
15 manager for the production -- the construction -- the  
16 production facility has said, "Let me tell you how many  
17 dollars per day of revenue and how many dollars per day of  
18 profit my company doesn't make every day that this facility is  
19 not in operation."

20 They're very focused on it. They're very focused on  
21 results. They're very focused on schedule.

22 Q. So when you're writing such a schedule or scheduling such  
23 a situation, what sort of things do you do to compress the  
24 schedule?

25 A. Well, first of all, you've got to have a reasonable

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1 chance of meeting the schedule. And early on, you're going to  
2 look at what do we know, what don't we know, what information  
3 do we need to put together to solve the problem, to design the  
4 system, to meet the schedule, and start developing a task list  
5 and very early on start developing a schedule to see that the  
6 tasks you must complete can be completed by the agreed upon  
7 finish date, okay? And --

8 Q. Would you perform -- I'm sorry. Go ahead. Continue.

9 A. In doing that, it's not uncommon to have to, as we call  
10 it, fast-track tasks. And that would be conducting several  
11 tasks in parallel, starting at the same time, finishing  
12 roughly at the same time, as opposed to conducting and  
13 executing the tasks sequentially.

14 In this case, if you feel the need to pilot three  
15 different technologies to decide and to identify the best  
16 technology, the most appropriate technology for solving the  
17 selenium problems at the Apogee Mines, you should consider and  
18 probably should and could -- and people have conducted these  
19 tests in parallel, rather than sequentially.

20 And in the cases I've mentioned here and in other cases  
21 where clients have had -- industrial clients have had consent  
22 decrees or consent orders or some reason they have to perform  
23 environmental responsibilities according to a tight schedule,  
24 they realize that, as a boss of mine once said, optimum is for  
25 the graduate student. Graduate students are always writing

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1 dissertations, the optimization of this or that. We don't  
2 have time for optimization here. We need to get something  
3 that will work and we need to start designing it and get it  
4 built according to the schedule requirements.

5 Q. And this kind of compressed schedule comes up not just  
6 when someone is trying to build a production facility to start  
7 making money, but in your experience when they're under a  
8 consent decree or an order from a court?

9 A. Yes, absolutely. The same kind of organizational  
10 techniques are used by industry to meet environmental imposed  
11 schedules as they are production and capital project  
12 schedules.

13 Q. Can you give a couple of examples of where your clients  
14 have been operating under consent decrees?

15 A. One was with -- doing work for Hooker Chemical at a  
16 phosphorus plant, and this was in the Love Canal days, and  
17 there was a particular set of circumstances that occurred, but  
18 they had to solve some problems at the -- environmental  
19 problems at this plant on a certain schedule, yes.

20 Another was doing work with -- on a Honeywell project in  
21 New Jersey. The Court ordered, "You've got to go out and fix  
22 this, you've got to fix it now, and you've got this much  
23 time." I worked on a team where one of the first tasks of the  
24 project was to develop the work plan. We had a month to  
25 develop the work plan for a several-year, I think, couple-

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1 hundred-million-dollar project. And, wow, it just wasn't  
2 enough time, but we did it because we had to do it. The  
3 client said it had to be done. The Court said it had to be  
4 done.

5 Q. You say those clients have a consent decree mentality?

6 A. Yes.

7 Q. What is that mentality? What are they trying to do or to  
8 avoid?

9 A. Well, the mentality is, "We've got to get" --

10 MR. HURNEY: Your Honor, I'm going to object. He's  
11 qualified as a wastewater engineer. To go off and talk about  
12 mentalities and attitudes and everything --

13 THE COURT: I agree. I sustain the objection.

14 BY MR. TEANEY:

15 Q. Okay. Have you given consideration to how long it would  
16 take for Apogee to install a treatment facility at its mine  
17 site?

18 A. Yes.

19 Q. And what was your conclusion about how long you think  
20 that would take?

21 A. I developed a schedule that would take 110 weeks to  
22 design and construct the system, start it up and to a point  
23 that it's in compliance.

24 Q. A hundred and ten weeks, that works out to two years and  
25 some remainder?

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1 A. Two years and some remainder, yes, sir.

2 Q. What is the remainder?

3 A. Oh, okay. A hundred and four -- two years and six weeks,  
4 I believe.

5 MR. TEANEY: Okay. At this time I'd like to use an  
6 exhibit and mark it as Plaintiff's 62.

7 THE COURT: All right.

8 MR. TEANEY: May I approach?

9 THE COURT: You may.

10 BY MR. TEANEY:

11 Q. Dr. Koon, do you recognize this document?

12 A. Yes.

13 Q. Did you prepare this?

14 A. Yes, I did.

15 Q. Is this your 110-week schedule you were just discussing?

16 A. It is.

17 Q. I just want to walk through here just a little bit.

18 Well, give us, for example, an example of some place where you  
19 were proposing that they should do some things concurrently.

20 A. Gee, I really didn't fast-track this schedule as much as  
21 schedules can be fast-tracked.

22 Q. Is that right?

23 A. That's correct. No, the one place where I did this was  
24 in the civil and site work, which is piggy-backed, if you  
25 will, a little bit with the development of the design, the



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1 detail design, the development of the detail design. There is  
2 likely to be some complication here in the construction of --  
3 well, first of all, as I said, you have real winters in West  
4 Virginia, and I don't show this schedule starting a certain  
5 month. I show that it started from time zero going for 110  
6 weeks, and I'm not sure when it would start.

7 So you want to get in and get your civil and site work  
8 done in the good months because it's going to be too wet to do  
9 a lot of that for extended periods of time in the winter. And  
10 by starting -- getting an early start on the civil and site  
11 work gives you some flexibility in doing that.

12 Second of all, I think -- I understand that it might be  
13 necessary to get a mining permit to build an equalization  
14 system if that's done by building an impoundment. And I've  
15 got -- I wanted enough time in there, provided some time for  
16 permitting and some extra more time than I normally would to  
17 do site work in case the equalization issues are solved by  
18 building that impoundment.

19 Now, then there is another construction timeline here  
20 that is for what I've called the balance of work, which would  
21 be all the mechanical and instrumentation and electrical work,  
22 etcetera, everything but the civil and site work associated  
23 with building such a plant.

24 Q. If they wanted -- if someone wanted to begin construction  
25 this spring, you know, at the end of the winter, based on this

Koon - Direct

1 schedule, can you identify when time zero would need to be?

2 A. Oh, I constructed this so I think it could be -- begin  
3 anytime. I'm not sure what you mean. I don't think it's  
4 time-specific.

5 Q. At times I'm not sure.

6 A. I think some of the times could be shortened if you  
7 started construction in, let's say, March or April, as opposed  
8 to starting construction in October.

9 Q. If you wanted to start construction under this schedule  
10 in March or April, when would time zero need to be, working  
11 backwards?

12 A. Oh, it would be -- oh, start construction in March or  
13 April, according to this, it would be 40 weeks prior to that.  
14 So about the previous May, something like that.

15 Q. Okay.

16 A. Be a little bit less than a year. Twelve weeks less than  
17 a year. So if you wanted to start in March, it would be --  
18 March, April, May. You'd need to start roughly the first of  
19 June, I think.

20 Q. Okay. So we may be a little bit too late to really take  
21 full advantage of the building season if time zero were today?

22 A. I haven't thought of it that way, but likely, yes.

23 Q. Are there ways to compress the front end of the schedule  
24 to get to building in the early spring?

25 A. Boy, I'd have to give that more thought. I think a good

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1 chance you could. I've seen a -- I've been part of a  
2 project -- probably depends on how you build this. Are we  
3 building one centralized facility? Are we building three  
4 facilities? Etcetera, etcetera. But I've been a part of a  
5 project that built a facility in about a year and a half. The  
6 client said it's got to be done. We figured out how to do it.

7 Q. Okay. I just want to walk through the major steps here.  
8 We have preliminary design. What takes place during  
9 preliminary design?

10 A. Basically you come up with an outline of the entire  
11 project, includes schematic drawings that are detailed enough  
12 to guide the detail design later on. You will have a basis of  
13 design report that contains the schematic drawings, outlines,  
14 the specifications and some beginning design sketches of other  
15 parts of the system and a beginning of the electrical design  
16 system.

17 The remainder of the design then is applying details and  
18 dimensions to the concepts and plans laid out in the  
19 preliminary engineering.

20 Q. And so that detail design then starts -- am I reading  
21 right that your detail design would start about week 16, 17?

22 A. Yes.

23 Q. Okay. And so what occurs during detail design?

24 A. You would add the details to the design that is  
25 schematically laid out and outlined in the preliminary

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1 package.

2 Q. Okay. Now, I see here we've got permitting. You would  
3 want to start that as soon as practicable; is that right?

4 A. Yes, that's correct.

5 Q. Okay.

6 A. I'm not sure how long it would take in this case. I  
7 allowed a year for it. I don't think it will take nearly a  
8 year, but I said let's put a year in there, and this project  
9 can be accomplished allowing a year for permitting.

10 Q. Would you be able to maybe do some permitting work even  
11 before the preliminary design is complete?

12 A. I think so. Somebody raised the question yesterday about  
13 what does the state DEP here require in terms of a modified  
14 NPDES permit application.

15 Q. Was that Mr. Rasmussen, the first witness who testified  
16 yesterday?

17 A. It might have been. Okay. And depending on how much  
18 detail they require, I would start that certainly as soon as I  
19 could. Okay.

20 Q. Understood. Procurement - Long Lead Items, what does  
21 that mean and what are you doing there?

22 A. There's some things like pumps that usually you can buy  
23 and they will be on-site fairly soon, within a month or two.  
24 There are other items that you buy, perhaps the main process  
25 reactors here, perhaps electrical switchgear, which usually

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1 has a long lead, and so you want to order those, because it  
2 will take you six or eight months a lot of the time to get  
3 them delivered to the site.

4 Q. And then construction bidding and award begins; is that  
5 correct?

6 A. Yes, that's correct.

7 Q. Okay. What takes place during that major segment?

8 A. You would issue the design package, which would include  
9 the plans and specifications, to, in this case, probably  
10 selected construction companies for bidding. You might, if  
11 you want to prequalify the constructors to make sure who's  
12 qualified and has the experience to do this project, you would  
13 do that ahead of it. But you mail out those packages and give  
14 them some time to respond to you with a bid package.

15 Q. If you weren't competitively bidding it, could you  
16 accelerate the construction a little bit?

17 A. Yes, I think so. And sometimes industries have  
18 contractors that routinely do work for them, and they will  
19 say, "We need to do it quickly. We need to do it according to  
20 a schedule. Come get started on this. Here's a small package  
21 of this and that and so on to get started on." And you could  
22 certainly do that in a shortened period.

23 Q. It looks like the final major item here is commissioning  
24 and start-up. And what takes place there?

25 A. Commissioning is basically working to see that all the

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1 motors turn and rotate in the right way, to see that the tanks  
2 will hold water, to see that you can pump from Point A to  
3 Point B as intended, wet testing of the system, things like  
4 that.

5 Operator training and start-up is -- you've got new  
6 operators; you need to train them. You need to start up the  
7 system. There's things you need to do during start-up that  
8 you won't have to do all the time after you have achieved  
9 steady -- I'll say steady state, quasi steady state  
10 operation.

11 Q. So is it your opinion that all of the tasks that we've  
12 outlined here could be accomplished in 110 weeks?

13 A. Yes.

14 Q. Okay. I want to talk about the cost of these systems  
15 with you. Have you reviewed cost data in preparation for your  
16 testimony today?

17 A. Yes.

18 Q. What cost data have you reviewed?

19 A. CH2M Hill has done a number of estimates. The most  
20 recent ones were contained in the FBR report, and I've used  
21 those as the basis for estimating some other costs.

22 Q. Did you hear Mr. McHale testify yesterday that the cost  
23 of a 2100-gallon-per-minute centralized system would be  
24 approximately \$40 million?

25 A. That's correct.

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1 Q. Okay. Is there a method by which an engineer would --  
2 could extrapolate from a \$40 million, 2100-gallon-per-minute  
3 system to estimate what it would cost for a larger system or a  
4 smaller system?

5 A. Yes, there are techniques.

6 Q. What methods would -- or what method or technique would  
7 you use?

8 A. Basically what you do is a relationship that's frequently  
9 used that relates the cost of systems of two different sizes  
10 to the capacities of those systems, and you'll take a ratio of  
11 the capacities and usually raise to a logarithmic power to  
12 function -- a logarithmic function, and you work that out.  
13 And that from that, if you have the cost of one system, you  
14 can estimate the cost of a system of a second size.

15 Q. Is there a particular logarithmic function that you would  
16 use in this circumstance?

17 A. What I did was take the estimates for the three flows  
18 that CH2M Hill estimated and determined the logarithmic  
19 coefficients between the first and second for systems smaller  
20 than the midpoint and the logarithmic coefficient between the  
21 second -- the middle and highest capacity estimate for systems  
22 larger than the midpoint estimate.

23 Q. Okay. And by the three flow ranges, you mean that were  
24 in the FBR report; is that correct?

25 A. Yes.

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1 Q. Do you recall what those numbers were in the FBR report?

2 A. I think they were 175, 500, and 800 gpm.

3 Q. Okay. Have you taken that method and applied it to the  
4 \$40 million, 2100-gallon-per-minute figure that you heard  
5 Mr. McHale testify about?

6 A. Yes. I used 2200 gallons per minute because I understood  
7 over the weekend that it was for a 2200-gallon-per-minute  
8 plant would cost now \$40 million. So I'm not sure which one  
9 of us is correct there.

10 Q. Okay. Would 100 gallons per minute make a large  
11 difference either way?

12 A. Not a large difference. It would make some, so yeah.

13 Q. So based on your application of that method or technique  
14 you've just described, could you estimate or have you  
15 calculated what the cost of a system that would treat  
16 5150 gallons per minute would be?

17 A. Yes.

18 Q. And what would that cost be?

19 A. Approximately \$62 million.

20 Q. Does that number 5150 have any significance to you?

21 A. If you take the -- what CH2M Hill has labeled the design  
22 maximum flows for each of the three Apogee outfalls and sum  
23 them, that's what you get.

24 Yesterday there was talk now of building a centralized  
25 treatment system where you would transport flows from two of



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1 the outfalls to the third outfall and do all the treatment in  
2 one location. If you designed that for the design maximum  
3 flow as defined by CH2M Hill, that would be 5150 gallons per  
4 minute.

5 Q. So the 62 million figure you provided would be for a  
6 centralized system to treat the design max as estimated by  
7 CH2.

8 A. That's right.

9 Q. Okay. Have you applied this method or technique to  
10 determine what the cost could be at the Hobet 22 site?

11 A. Yes, I have.

12 Q. Okay. Well, first, how did you determine what the flow  
13 would be at the Hobet 22 outfall?

14 A. I haven't seen an evaluation or identification of that  
15 flow, so I went to the -- used the DMR, the discharge  
16 monitoring reports, for Hobet 22 and made a -- did a small  
17 analysis of those flows, throughout the max flow, throughout  
18 the minimum flow, into thinking that perhaps there was some  
19 measurement problem there, and then used the remaining flows  
20 and got an average flow.

21 Then I used the ratios between the base flow and the  
22 average flow that CH2M Hill defined for Apogee and between the  
23 average flow and the design max flow that they used and  
24 applied those to the Hobet DMR flow data.

25 That's kind of rough, but that's all I had and all what I

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1 could do with the information available.

2 Q. Certainly. Did you see any -- in the discovery material  
3 that you reviewed, you didn't see any estimates of the flow at  
4 Hobet 22 beyond the DMRs?

5 A. No.

6 Q. Okay. What did you determine the average flow at Hobet  
7 22 to be?

8 A. I can't remember. Eight seventy-five gallons per minute  
9 is the design max, and maybe it's five hundred. It's in the  
10 notes. I can't remember right now.

11 Q. Could it have been in the neighborhood of 350?

12 A. That sounds right. Okay.

13 Q. But nonetheless the design max you recall to be 875.

14 A. Yes.

15 Q. And you determined that based on a comparison of the  
16 ratios that were determined for the average in design max at  
17 Apogee and applied that to the DMR data that you evaluated.

18 A. Yes.

19 Q. Okay. So based on an 875 design max at Hobet 22, have  
20 you estimated what the cost of an FBR system would be at Hobet  
21 22?

22 A. Yes.

23 Q. And what have you concluded?

24 A. First of all, I estimated based on the CH2M Hill cost  
25 data in the FBR and came up with right around \$10 million.

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1 Okay. So the last couple of days I hear that CH is now  
2 saying, oops, it's going to cost the \$40 million number. So I  
3 factored that in and re-did it. And if I did that, I came up  
4 with about \$25 million. So you've got \$10 million -- and I  
5 don't know if the same issues that caused CH to raise their --  
6 increase their estimate for the Apogee sites would apply at  
7 Hobet or not; just I don't have that information.

8 So I rubbed my belly and gazed at the stars and decided  
9 that let's use fifteen, between -- it's a number between ten  
10 and twenty-five, and it's conservatively on the low side of  
11 the middle of that, okay?

12 Q. And you're facetiously saying you rubbed your belly and  
13 considered --

14 A. Yes, but I mean you kind of, you know, go off and think  
15 about it and what's reasonable here and -- is what I'm saying.  
16 And I think that's reasonable.

17 Q. Right. And that's because the fifteen million figure is  
18 closer to the ten than to the twenty-five. So that's where  
19 the conservatism comes in.

20 A. Yes.

21 Q. But those ten and twenty-five were calculated based on  
22 the method that you just described.

23 A. That's right, yes.

24 Q. The logarithmic function.

25 A. The logarithmic function method, if you will, yes.

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1 Q. Okay.

2 A. That's right.

3 Q. Have you given any consideration to the costs of  
4 equalization at the Apogee sites or --

5 A. Yes, I have.

6 Q. Okay. What conclusions have you drawn about the costs of  
7 equalization?

8 A. We don't have a lot of information there. CH2M Hill said  
9 that if you treat the design maximum flow at Outfall 001, they  
10 project that you would need 60 acre feet of storage. That  
11 translates to 16 million gallons. If you do that in a steel  
12 tank, you're talking about one dollar per gallon. For capac-  
13 ity you're talking about \$16 million. If you have difficult  
14 geotechnical foundation conditions, if you have problems with  
15 rock, it's going to be more than that. So, you know -- and  
16 it's going to cost you more than a dollar a gallon by the time  
17 you put piping to it and put controls on it and so on.

18 So I figured -- I put in a factor, an amount of  
19 \$20 million for equalization. I don't know if -- if you  
20 continue to use ponds at the other two Apogee sites, I think  
21 you likely will have to spend some money on -- those are  
22 constant level ponds, as I understand them. And I think  
23 you'll want the ability to vary the levels in those. You have  
24 to put in a control structure so you can pump flow out of  
25 there to vary the level of those ponds. I think there are

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1 some other things that will come up. So I said \$20 million.

2 Q. So your conclusion, based on the cost of storage and  
3 tanks and the cost -- as well as the cost of impoundments, has  
4 led you to conclude that \$20 million for equalization would be  
5 necessary?

6 A. Yes.

7 Q. Is that a conservative figure?

8 A. I think it probably is, but -- well, you know, four years  
9 after this project is started, four years since the permit, we  
10 still have done in CH2M Hill's estimate 1 to 2 percent of the  
11 engineering required, but -- so there's not a lot to go on.

12 Q. So would these be the equivalent of Class 5 estimates? I  
13 think we had some talk about Class 5 --

14 A. Yes, they identify them as Class 5, and I agree with that  
15 classification method. That's one that's becoming commonly  
16 used and makes sense.

17 Q. And can a Class 5 estimate have a margin of error plus  
18 100, minus 50?

19 A. It can, yes.

20 Q. Okay. So we have an estimate of about 62 million. You  
21 estimated 62 million for a centralized plant at Apogee.

22 A. Say 60.

23 Q. Sixty?

24 A. Reduce that to one significant figure.

25 Q. Okay. So 60 million at Apogee for the centralized

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1 system.

2 A. Right.

3 Q. And we went with 15 million. You've concluded 15 million  
4 for an FBR system at Hobet 22 --

5 A. That's correct.

6 Q. -- is that correct?

7 A. Uh-huh.

8 Q. And then you've concluded that there should be about a  
9 \$20 million fund for equalization; is that correct?

10 A. Yes.

11 Q. And the sum of those two numbers -- and here I am doing  
12 math -- is 95 million?

13 A. That's right. That's three numbers, I think.

14 Q. Okay. Have these -- excuse me for a moment. In your  
15 opinion, based on your 38 years of experience, is there a lot  
16 of risk with installing ABMet or FBR or RO at these sites?

17 A. Risk is a complicated subject. There is for the two  
18 processes that in my opinion are proven -- let's talk about  
19 what kind of process you select for a case like this. I've  
20 talked about this a little bit.

21 This is a case where we've got to do something by a  
22 certain date, and that date is not far off. In my opinion,  
23 you pick technologies that are as well-developed as you can  
24 find. You place -- you give a high priority on that. You  
25 don't pick emerging technologies, which have a larger number

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1 of unknowns associated with them.

2 So I've said, in my opinion, I think that biological  
3 treatment or membrane process, reverse osmosis, are  
4 applicable. And those are both well-developed processes.  
5 They've both been used for over a number of years, now not in  
6 West Virginia at surface mines to treat selenium to less than  
7 5 micrograms per liter, but there are lots of applications of  
8 both of those type of processes. There are --

9 Q. Does it make a difference?

10 A. -- applications of biological treatment at full-scale to  
11 treat selenium to less than 5 micrograms per liter in  
12 different places and on different wastes.

13 Let's talk about the factors involved here. The waste  
14 does contain selenium, and we know that we've handled selenium  
15 at other places and we handle it down to 5 micrograms per  
16 liter. It contains scaled -- the wastewater contains  
17 scale-forming constituents. People have experienced managing  
18 scale in wastewaters and waters for, gee, probably a hundred  
19 years, but, frankly, I haven't looked that up, okay?

20 So we've got -- we break it into the components, and I  
21 think the risk associated with each of those components is  
22 certainly manageable.

23 Q. Have you in your experience ever taken a technology  
24 that's been proven or is matured in another area and applied  
25 it in a unique setting?

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1 A. Yes, I have.

2 Q. Do you do this frequently?

3 A. Yes, not as frequently now perhaps as in the '70s, but  
4 the situation in the 1970's was the Clean Water Act was passed  
5 in 1972 and all industry had to comply with permits by 1977,  
6 and practically all industries were in the situation of  
7 applying treatment processes to new situations and incurring  
8 some risk that those processes would work to meet the  
9 conditions of their permit in 1977. They took the risk. They  
10 had to.

11 We made a national priority out of cleaner waters, and  
12 Congress made a national priority out of it passing the Clean  
13 Water Act, and people had to do that to meet their permits,  
14 and they did. And by and large, they were very successful at  
15 it.

16 So, yes, we've done that before. And to think that you  
17 can do it without incurring risk is just not reality. Any  
18 project of this size is going to involve incurring some risk  
19 on the part of the owner; can't get around it.

20 Q. Well, that brings me to a question about performance  
21 guarantees. In your experience have you encountered  
22 performance guarantees?

23 A. On occasion, yes.

24 Q. Did you hear Dr. -- or did you hear Mr. McHale testify  
25 about performance guarantees here today?



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1 A. Yes.

2 Q. What in your experience is a typical performance  
3 guarantee that a vendor would offer?

4 A. The most typical one that I've encountered is that the  
5 supplier would have a defined performance period during which  
6 the system would need to perform to the specification. The  
7 basic specification here probably would be to meet the 4.7  
8 microgram per liter selenium limit. Might have a couple of  
9 other provisions, but that certainly would be the most  
10 important one.

11 Q. And is that for a defined period of time?

12 A. Usually given a one-month period.

13 Q. And who operates the treatment system during that period?

14 A. For the vendor to take -- to offer that warranty or  
15 guarantee or whatever you call it, they will usually require  
16 that they be in -- that they be given responsible charge for  
17 the treatment system during that time.

18 Q. Did you -- were you in the courtroom and did you hear  
19 Dr. Rooney's -- Mr. Rooney's -- I'm promoting everyone --  
20 Mr. Rooney's videotaped deposition?

21 A. Yes.

22 Q. Did you hear him testify about the performance guarantee  
23 that GE would offer for ABMet?

24 A. Yes.

25 Q. In your experience is that consistent with what

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1 performance guarantees are offered by other vendors?

2 A. Yes. A lot of details haven't been defined there, of  
3 course, but it seems consistent.

4 Q. Anybody ever give an absolute conditional --  
5 unconditional guarantee that their materials will work?

6 A. Very rarely. The people that are successful and who stay  
7 in business get good at writing these guarantees. If they're  
8 not good at it and they write them where they're found  
9 responsible when they really shouldn't be responsible, they go  
10 out of business, because it happens frequently enough. So  
11 those people get washed out of the business pretty quickly.

12 Therefore, the guarantees are, frankly, not as good as  
13 the owner would like them to be, again because there are risks  
14 that the owner must incur here. And anybody that's good at  
15 writing these guarantees will insist that the owner take the  
16 appropriate risks for an owner. The composition of the  
17 wastewater is a key one.

18 Q. In your opinion is it reasonable for an owner to insist  
19 on an absolute unconditional guarantee before ordering  
20 equipment?

21 A. I cannot consider that reasonable --

22 Q. Okay.

23 A. -- based on my experience.

24 Q. Have you had the opportunity to review -- strike that.  
25 Did you hear Mr. Rasmussen testify yesterday regarding the

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1 CONSOL reverse osmosis system that is being installed in  
2 Northern West Virginia?

3 A. Yes.

4 Q. Have you had a chance to review what I believe is  
5 Plaintiff's 15, Plaintiff's Exhibit 15, which is a wastewater  
6 characterization from CONSOL?

7 A. Yes.

8 Q. Have you compared that to Apogee --

9 MR. HURNEY: Excuse me. Your Honor, I object. I  
10 object for the same reason I raised earlier about they're  
11 going to ask him to make a comparison between this project and  
12 the CONSOL project. That's why we objected earlier to a  
13 portion of the testimony, and I'm objecting to the witness  
14 trying to compare two completely different systems under two  
15 completely different circumstances. It has nothing to do with  
16 us.

17 THE COURT: Well, I'm going to overrule the  
18 objection. If that's what counsel intends to ask him, he can  
19 be cross-examined about the basis for his finding that there  
20 are similarities sufficient to offer an opinion.

21 MR. TEANEY: Thank you, Your Honor.

22 BY MR. TEANEY:

23 Q. I don't know that I got a -- did you -- have you compared  
24 the CONSOL wastewater with an analysis of the Apogee  
25 wastewater?

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1 A. Yes.

2 Q. Have you drawn any conclusions about whether one or the  
3 other of those waste streams would be more challenging to  
4 treat with a membrane?

5 A. Conclusions are that both of them will require pre-  
6 treatment for the proper functioning of a membrane, i.e.,  
7 reverse osmosis system. You'll also observe from looking at a  
8 summary of the characteristics of scale-forming ions in the  
9 two wastewaters, that the CONSOL wastewater has higher --  
10 pretty consistently higher concentrations of those ions than  
11 does the Apogee wastewater.

12 Q. And what are the particularly -- you didn't use this  
13 word, but I'll use it -- problematic ions in the CONSOL  
14 wastewater?

15 A. Looking at iron, manganese, magnesium, strontium, not  
16 present much -- very high concentration but can be  
17 scale-forming. Barium, sulfate, calcium, and magnesium.  
18 Maybe one or two -- fluoride and silica. I think that's the  
19 entire list. Maybe one or two I'm leaving out.

20 Q. So do I understand your conclusion to be that the  
21 wastewater at CONSOL would require more elaborate pretreatment  
22 than that at Apogee?

23 A. Actually I think you might use the same pretreatment  
24 processes in both cases, but you've got to get a higher  
25 percent removal of those problematic ions at CONSOL than you

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1 would at Apogee to have a well-functioning and well-operated  
2 RO system.

3 Q. And how did you reach that conclusion beyond the  
4 comparison of the two --

5 A. I looked at the ion compositions and also used a model.  
6 There are models -- and several on the market -- which you can  
7 input this data and make -- play several what-if games about  
8 the operation of your reverse osmosis system based on how much  
9 water you recover in the reverse osmosis system, how much --  
10 what you're doing is concentrating the water, the ions, in the  
11 reverse osmosis system. And this software allows you -- it  
12 mathematically and chemically concentrates these ions and  
13 tells you what will precipitate or scale.

14 MR. TEANEY: Okay. If the Court will indulge me  
15 just a moment to speak with co-counsel --

16 THE COURT: Go ahead.

17 MR. TEANEY: -- I think I'm just about finished.

18 I have no further questions. At this time plaintiffs  
19 would move for admission of the documents that we used here,  
20 which I believe were Plaintiff's Unique 5, 61, 62, and  
21 Dr. Koon's resume, which is Plaintiff's Unique 2 (sic).

22 THE COURT: Any objection?

23 MR. HURNEY: No objection, Your Honor.

24 THE COURT: They're each admitted.

25 We'll take about a five-minute recess before cross-

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1 examination. You may step down.

2 (Recess from 2:35 p.m. to 2:45 p.m.)

3 THE COURT: All right. Are you ready to proceed?

4 MR. HURNEY: Yes, Your Honor.

5 THE COURT: Go ahead.

6 CROSS EXAMINATION

7 BY MR. HURNEY:

8 Q. Dr. Koon, are you ready to answer some further questions?

9 A. Sure.

10 Q. Okay. We've met several times. My name is Tom Hurney.

11 You know I represent Apogee and Hobet in this case, correct,  
12 sir?

13 A. That's correct. That's my understanding.

14 Q. Now, we first met when you appeared for a deposition in  
15 this case on July 2, 2010, correct? Or was it the day before  
16 when you did your site visit?

17 A. I thought it was July 3rd, but plus or minus a day, I  
18 agree.

19 Q. Okay. Let me walk through. It's my understanding -- and  
20 you tell me if I'm correct. It's true, isn't it, that you  
21 were first hired to review this case in May of this year,  
22 correct?

23 A. That's correct.

24 Q. Okay. Beginning or end of May?

25 A. Mid May? I don't know.

Koon - Cross

1 Q. Mid May. And then you had the opportunity, whether it  
2 was July 1st or 2nd, to pay a site visit to the Apogee site,  
3 correct?

4 A. That's correct.

5 Q. You did not visit the Hobet site, correct?

6 A. That's correct.

7 Q. You have not reviewed the NPDES permit for Hobet 22,  
8 correct?

9 A. I have not -- don't recall seeing that, no.

10 Q. In addition, it's my understanding that you have relied  
11 upon materials supplied to you, along with your site  
12 evaluation, correct?

13 A. That's correct.

14 Q. And it seems to me -- and you correct me if I'm wrong --  
15 that you were relying very heavily on reports and other  
16 materials provided by CH2M Hill, correct?

17 A. I think heavily is an exaggeration. I don't believe you  
18 have any basis for that.

19 Q. Okay. Well, let me walk through a few things.

20 A. Are you talking about in general for all the technologies  
21 that we've discussed?

22 Q. Well, why don't I ask you some questions. I don't want  
23 to confuse you.

24 A. Okay.

25 Q. Okay. You testified at some length about cost. The

Koon - Cross

1 basis -- the basis for your opinions starts with the cost  
2 estimated by CH2M Hill, correct?

3 A. Correct.

4 Q. Okay. You talked at some length about flow. And the  
5 basis for your opinion about flow came from your review of  
6 CH2M Hill's reports, correct?

7 A. Correct.

8 Q. Okay. You talked about a number of different  
9 technologies, each of which were reviewed and included in the  
10 CH2M Hill report of January 2009, correct?

11 A. Correct.

12 Q. You also reviewed portions of a prior hearing before this  
13 Court, didn't you?

14 A. Correct.

15 Q. You reviewed the testimony of a Dr. Bell?

16 A. I believe I did, yes.

17 Q. Okay. And he's a wastewater guy, right?

18 A. I think so. I don't know him.

19 Q. Do you recall anything about his testimony?

20 A. I might.

21 Q. Okay. You also reviewed the testimony of Dr. Culkin,  
22 correct?

23 A. That's correct.

24 Q. Okay. I believe you testified a few moments ago that  
25 nobody gives unconditional guarantees for their products; is



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1 that correct?

2 A. I don't think I said no one. I think I said it's very  
3 unusual.

4 Q. Okay. You reviewed Dr. Culkin's testimony where he  
5 guaranteed VSEP, didn't you?

6 A. Yes.

7 Q. Now --

8 A. No, I think I disagree with that.

9 Q. Okay. All right. Let's talk first -- I'm going to jump  
10 around a little bit. If I jump too much, stop me.

11 A. Sure.

12 Q. You have tendered today a schedule that you created that  
13 comes out, I believe you said, to two -- two years and some  
14 weeks?

15 A. That's correct.

16 Q. Okay. And this is a schedule that you prepared and have  
17 relied on to offer your opinion as to how long this project  
18 will take, correct?

19 A. That's correct.

20 Q. Okay. And did you have this schedule in your possession  
21 when we took your deposition for the second time on August 6,  
22 2010?

23 A. Yes.

24 Q. Okay. And, in fact, when you met with CH2M Hill, you had  
25 this schedule, correct?

Koon - Cross

1 A. That's correct.

2 Q. Okay. Why did we not see this before today?

3 A. I don't know. I don't think you asked me for it. I'm  
4 not sure there was an opportunity to give it to you.

5 Q. Now, my understanding of this schedule is that -- I've  
6 written on this a little bit.

7 May I retrieve a clean copy from the clerk, Your Honor?

8 THE COURT: Certainly. Here it is.

9 MR. HURNEY: I apologize.

10 THE COURT: That's all right.

11 THE WITNESS: Am I allowed to speak to my counsel?

12 THE COURT: Not during your examination.

13 THE WITNESS: Okay.

14 BY MR. HURNEY:

15 Q. I'm just going to put -- do you have this in front of  
16 you, sir?

17 A. Yes.

18 Q. Now, as I understand this, and during your testimony in  
19 response to questions by Mr. Teaney, you've listed down on the  
20 left-hand side the basic large tasks that need to be  
21 accomplished to get a project completed. Is that a fair  
22 summary?

23 A. Yes.

24 Q. All right. If you were to do a more detailed analysis,  
25 there would be a series of sub-tasks underneath each one of

Koon - Cross

1 the larger tasks, correct?

2 A. Probably so, yes; certainly some of them.

3 Q. And do you use a computer program to do this?

4 A. Yes.

5 Q. Which program do you use?

6 A. Excel.

7 Q. This is just a normal --

8 A. Excel spreadsheet.

9 Q. There are programs that are specifically designed for  
10 preparing construction schedules, aren't there?

11 A. That's correct.

12 Q. All right. Do you ever use those programs, or are you an  
13 Excel guy?

14 A. I haven't used the others. I did Excel.

15 Q. Did you prepare this yourself?

16 A. Yes.

17 Q. Now, as I understand it, you have for each of these  
18 tasks -- is that an okay word to use, "task"?

19 A. Sure.

20 Q. Okay. For each task, you have come to the conclusion  
21 about a period of time in which the task needs to be done; is  
22 that correct?

23 A. I would modify "needs to" to say "could be accomplished."

24 Q. It could be accomplished. All right. And as you add all  
25 of these tasks up, when you get to the end, it gives you the

Koon - Cross

1 total amount of time the project will take, correct?

2 A. You can't add them all up because some overlap.

3 Q. Okay. I was going to get to that.

4 A. Okay.

5 Q. But generally you're trying to go from A to Z, correct?

6 A. Right.

7 Q. So if you were to do this in sequence, it would take this  
8 long, correct? (Indicating)

9 A. Okay.

10 Q. Okay. Well --

11 A. There's no scale on that. I, you know --

12 Q. I've always disliked cross-examining engineers, but in  
13 any event, so what you've done is you looked at the schedule  
14 like any manager would look at it, like anyone making a  
15 schedule, and say what things can we do at the same time as  
16 other things, correct?

17 A. Okay. Yes.

18 Q. And that would be -- I think you used the term doing them  
19 in parallel.

20 A. Right.

21 Q. That can shorten the ultimate schedule because you no  
22 longer -- you take something that would be in sequence and you  
23 move it back out of the schedule so it ultimately shortens the  
24 schedule; fair?

25 A. That's correct.

Koon - Cross

1 Q. All right.

2 A. Uh-huh.

3 Q. You still have to estimate the amount of time that each  
4 particular task will take; is that correct?

5 A. That's correct.

6 Q. And it is the estimation of the amount of time that a  
7 task will take something that is a matter of judgment for an  
8 engineer?

9 A. Yes.

10 Q. You estimated some of these times, say for permitting,  
11 based on your experience; is that correct?

12 A. That's correct.

13 Q. Okay. You did not look to any particular data or  
14 information about how long it takes to get a permit for  
15 anything, NPDES, widening a pond, building a dam, in  
16 West Virginia, correct?

17 A. I partially agree with that. You say I didn't look at  
18 any of this, and I've done permitting before, so I've got some  
19 feel for how long it typically takes. And there's so little  
20 detail to this project that I did what I could with the amount  
21 of detail that's there.

22 Q. Okay.

23 A. And there were estimates and judgments involved; I agree.

24 Q. I think we're agreeing.

25 A. Yeah.

Koon - Cross

1 Q. You're saying, "I have a general experience with how long  
2 things take."

3 A. Yes.

4 Q. "I've done permitting, and I believe that the permitting  
5 would be consistent with that."

6 A. Yes.

7 Q. Fair?

8 A. Fair.

9 Q. Okay. When you come to a final schedule for a project  
10 like this -- first of all, do schedules change as projects  
11 proceed?

12 A. They can, yes.

13 Q. Okay. Give me two examples of how a schedule would  
14 change as a project proceeds. As a matter of fact, I'll give  
15 you one. You talked about weather. If you had weather in the  
16 middle of your construction schedule, that might lengthen  
17 that, correct?

18 A. It could.

19 Q. If -- what other -- I guess I could ask this question.  
20 You've done a lot of scheduling. Have you ever had a project  
21 go off the rails, ever had a project go off schedule in 38  
22 years?

23 A. Oh, sure.

24 Q. Okay.

25 A. Yeah.

Koon - Cross

1 Q. Tell me some of the reasons that your schedule, even made  
2 under the best of circumstances, doesn't always fit, doesn't  
3 always work.

4 A. Ordered a reverse osmosis system one time. They off-  
5 loaded it onto a truck from a boat. The truck takes off, hits  
6 a highway overpass, smashes the reverse osmosis system. So  
7 take it to a warehouse, take it apart, bring in new parts,  
8 reassemble it, etcetera, and there were schedule impacts.

9 Q. And the next thing you know you've got a six-week delay.

10 A. That's right.

11 Q. And you listened to Mr. Rasmussen yesterday. I think he  
12 said they were six months behind schedule on their project  
13 down at Buchanan, Virginia. Did you hear that?

14 A. I think I heard something like that; no details, of  
15 course.

16 Q. But in any event, there are things over which we have no  
17 control that can affect the schedule.

18 A. And there are things over which we do have control that  
19 affect schedules.

20 Q. Okay. And that's why the things you have control over,  
21 that's why, as best you can, you try to do things in parallel,  
22 correct? You try to do things a little earlier, as you stated  
23 earlier.

24 A. That could be one reason. Another reason is that you  
25 have to do them in parallel to meet your schedule, to meet the

Koon - Cross

1 end date.

2 Q. Well, in a matter of -- so another engineer -- well,  
3 you're aware -- I mean you sat in a room for a whole day and  
4 talked with the CH2M Hill engineers, correct?

5 A. That's correct.

6 Q. Okay. And do you feel like you had a pretty open  
7 discussion back and forth with them about building an FBR  
8 plant?

9 A. Yes, I thought so.

10 Q. I thought -- I sat there. I saw you go back and forth  
11 with them over filtration related to FBR units.

12 A. Okay.

13 Q. You had some ideas. They had some ideas.

14 A. Right.

15 Q. You also put up a schedule and talked back and forth  
16 about your opinions of the schedule, correct?

17 A. That's correct.

18 Q. My recollection is that at the end of the day, that this  
19 schedule was about two years and six months. Is that your  
20 recollection?

21 A. That's correct.

22 Q. Okay. Is two years and six months reasonable?

23 A. It would be subject to some more discussion, but that's  
24 not that far off from two years and ten weeks, yes. Now, I  
25 participated in that. We spent a fair amount of time



Koon - Cross

1 discussing that schedule. I'd already developed this schedule  
2 then, and that's the reason I stuck with this rather than  
3 going with the -- I'll say the collaborated two and a half  
4 years, okay?

5 Q. Well, I just --

6 A. So I'm not disavowing participation in or any ownership,  
7 if I'm due some, of the two years -- two-and-a-half-year  
8 schedule.

9 Q. I just -- I had not -- we took your deposition, and I'd  
10 just never seen before today that you had reduced your 110  
11 weeks to this level of detail.

12 A. Well, you mentioned that earlier, and actually I had that  
13 last week during that meeting, and I didn't -- I don't  
14 think -- I know I didn't have copies of it, didn't offer it,  
15 but I had it at that time, so --

16 Q. In any event -- now, let me go back. So you're hired mid  
17 May. You have -- and we talked about you reviewed a number of  
18 documents. You did a site visit, correct?

19 A. Correct.

20 Q. Okay. Now, as of -- and I'll tell you that the date of  
21 your deposition was July 2nd. As of July 2nd you had been in  
22 the case for a couple of months, or a month and a half. You  
23 really hadn't formed opinions at that time, had you?

24 A. Not to your satisfaction.

25 Q. Well, I could quote where you told me in here that you

Koon - Cross

1 really hadn't formed your opinions.

2 A. Okay.

3 Q. So your opinions were first -- I think you came up with  
4 your opinions by August 6th of 2010, correct?

5 A. That's correct.

6 Q. And that would have been last week?

7 A. Yes.

8 Q. Took your deposition by telephone last Friday, correct?

9 A. That's correct.

10 Q. Okay. Now, you have talked, I believe -- one moment.

11 I'm sorry, Doctor. I've got too many papers in front of  
12 me and I'm trying to shuffle too much.

13 I want to talk to you a little bit about experience. My  
14 understanding is that July 1st or 2nd was the first time you  
15 had ever been on the site of a surface mine, correct?

16 A. Perhaps was.

17 Q. I thought you told us in your deposition that you had  
18 worked on another mining project.

19 A. Yes. And I don't remember if it was a -- I think it may  
20 have been a surface mine.

21 Q. I thought you told us it was a tunnel mine.

22 A. The pyrite mine?

23 Q. Yes.

24 A. That was a tunnel mine, that's right.

25 Q. Okay. So are you saying that you had been on a surface

Koon - Cross

1 mine on a prior occasion?

2 A. I think it was a surface mine or either a residue  
3 disposal area, a big residue disposal area. I'm not sure  
4 which one.

5 Q. Okay. You don't recall what that was about?

6 A. No.

7 Q. Okay. Fair enough. Now, your experience in treating  
8 wastewater has largely been with regard to wastewater produced  
9 in factories or in municipal treatment systems, correct?

10 A. A lot of it has, yes.

11 Q. Okay. And when you have wastewater that comes out of a  
12 factory, is it fair to say that's typically coming out of a  
13 pipe at a controlled rate?

14 A. Typically coming out of a pipe but certainly not at a  
15 controlled rate.

16 Q. Okay.

17 A. Somebody has control of it, but many people would have  
18 control of it; and if you're the treatment plant operator, it  
19 has every appearance of being uncontrolled, and you've got to  
20 manage it assuming it's uncontrolled, okay?

21 Q. Do any of the plants that you have experienced -- and  
22 think back to your projects -- have the range of difference in  
23 flow that you can see at one of these outfalls between a base  
24 flow and a 25-year storm?

25 A. Oh, yeah.

Koon - Cross

1 Q. Hundreds of thousands of gallons?

2 A. Yes.

3 Q. Okay. And what kind of plant --

4 A. Do you want me to think a minute or --

5 Q. Well, I mean you said yes. It surprises me. What kind  
6 of -- you worked, say, pharmaceutical plants and factories.

7 Which one would have that drastic a difference in flow?

8 A. Well, pharmaceutical plant factories are not parallel  
9 categories, but, gee, the factor here is from a base flow of  
10 about 3 or 4 X, I think, and manufacturing facilities can  
11 easily have that difference. Some manufacturing facilities  
12 are closed on weekends and you've got to keep the treatment  
13 system going, so you've got a factor there of probably 10 or  
14 12.

15 Q. So you might have over the weekend --

16 A. You've got to effectively treat all the wastewater.

17 Q. Let me understand that. Over the weekend, it would go  
18 way down --

19 A. Way down.

20 Q. -- because you're not -- because nobody is working. You  
21 still treat it. And then you come back --

22 A. Still generating some.

23 Q. Okay. And then you come back Monday morning and you've  
24 got to crank it back up.

25 A. That's correct.

Koon - Cross

1 Q. Okay. That's different than an outfall which could be at  
2 base flow for three weeks and then you have a rain and it  
3 suddenly kicks up.

4 A. Yes.

5 Q. Okay. There's more predictability in the difference in  
6 flows in -- for example, the factory that you used as an  
7 example, it would be a predictable difference in flow, as  
8 opposed to an unpredictable difference.

9 A. I don't agree with that. Let me give you another  
10 example. You have an organic chemical plant. You've got a  
11 big reactor full of product --

12 Q. Okay.

13 A. -- and something goes bad with that reaction and the  
14 operator turns the valve and discharges the entire reactor  
15 full, which has a certain amount of flow with it but lots of  
16 contamination. And the first thing the operator at the  
17 treatment plan knows of it, wow, here it comes and he didn't  
18 know it was coming. That's at least as sudden as a storm  
19 coming up.

20 Q. But that's also a rare emergency, isn't it?

21 A. What do you mean, rare? What's your frequency?

22 Q. Does that happen every day?

23 A. It doesn't happen every day. It can happen once a month  
24 in some places.

25 Q. Really?

Koon - Cross

1 A. It shouldn't, but it can. It has. It does. And it's  
2 not an emergency. I'm talking about being short of an  
3 emergency.

4 Q. Now, going back to your schedule --

5 A. If you're making -- say you're making gasoline and you've  
6 got a pipeline or tanks containing the crude oil, okay? And  
7 maybe there are other things you add into the oil. You keep  
8 those in the tanks; and if you're operating the gasoline  
9 production process, you control how much of all of those feed-  
10 stocks to your process come in and the rate at which they come  
11 in.

12 If you're operating a treatment plant, you never have  
13 control over your feedstock. It comes at you in an  
14 unpredictable way. And that's one of the things that you've  
15 got to get on top of to understand and to master and to manage  
16 if you operate a treatment plant, and it really doesn't make  
17 much difference what kind of treatment plant you're managing.

18 Q. So your testimony --

19 A. Does that link to what you're saying?

20 Q. Your testimony -- I want to make sure I understand this.  
21 Your testimony is that the waste coming from a factory -- and  
22 I'll use whatever factory you want to use --

23 A. Uh-huh.

24 Q. -- differentiates in flow the same way that you see  
25 differentiate -- or to the same degree and just as

Koon - Cross

1 unpredictably as you would see the difference in flows at a  
2 outfall from a surface mine. Is that your testimony?

3 A. I wouldn't word it that way. I'm not sure what kind of  
4 particular small nuance you might apply to that mix, but  
5 wastes are unpredictable. And one of the problems for the  
6 wastewater treatment plant designer and operator is to manage  
7 those flows effectively so they can treat them.

8 Q. Well --

9 A. Maybe -- I think we're probably saying the same thing.

10 Q. Well, I guess I'm just surprised that you're not  
11 recognizing that there's some difference between recognizing,  
12 managing and treating an outfall at a surface mine and  
13 managing and recognizing and treating a flow coming out of a  
14 pipe at a plant.

15 A. I agree there's some differences.

16 Q. Well, I just didn't feel like we were agreeing.

17 A. Okay. I'll agree with you. I was just responding to  
18 your question. The fact that you're treating -- if you're  
19 having to treat a flow from a 25-year storm and that happens  
20 statistically once every 25 years, then yes, that's different  
21 from the kind of things I've discussed coming from  
22 manufacturing facilities, because those usually have a  
23 frequency of occurrence of, let's say, one to three months or  
24 something like that, okay?

25 So, yes, there is a difference of frequency, and there

Koon - Cross

1 are other differences as well, but both are variable and both  
2 are variable beyond the control of the person managing the  
3 treatment system.

4 Q. Making it a challenge. It's a challenge.

5 A. It's a challenge, yes.

6 Q. Okay.

7 A. That's right.

8 Q. We can agree on that.

9 A. Yeah.

10 Q. All right. Now, speaking of that, I want to talk about  
11 municipal wastewater.

12 A. Okay.

13 Q. Is that -- you know, by your resume, that's been a large  
14 part of your career.

15 A. It's been a part of my career, yes.

16 Q. A reasonable part?

17 A. I suppose so.

18 Q. Enough to talk about it?

19 A. Enough to talk about, yes.

20 Q. Municipal wastewater is where, you know, essentially all  
21 the waste from everybody's house and everything else goes in  
22 and it's treated so that it can then be released back into the  
23 rivers. Tell me, where does the waste come from, what do you  
24 do with it, and where does it go?

25 A. Wow, there have been textbooks written on this, sir, but



Koon - Cross

1 in 25 words or less, comes from households --

2 Q. We don't have to get too detailed.

3 A. Comes from households, commercial establishments,  
4 industry, and storm runoff from streets and groundwater  
5 infiltration, okay?

6 Q. Okay.

7 A. What else did you want to know? How it's treated?

8 Q. Okay. So that all has to be collected and brought  
9 somewhere to treat.

10 A. That's correct.

11 Q. Okay. Typically I think Charleston -- I'll get my  
12 directions.

13 A. This is Huntington.

14 Q. But in cities you can find a wastewater treatment plant  
15 pretty close.

16 A. Probably so, yes.

17 Q. Okay. And I recall seeing these huge metal, you know,  
18 kind of metal tanks buried in the ground.

19 A. Could be, uh-huh.

20 Q. Now, when you design -- now, where does -- once the water  
21 is cleaned, where does it usually go? Does it usually go  
22 back, like here, back into the Kanawha River?

23 A. It's discharged to the environment, usually a river,  
24 lake, something like that, ocean.

25 Q. Subject to government regulation?

Koon - Cross

1 A. Yes.

2 Q. Okay. I don't know this. Do they get NPDES permits, or  
3 is there some other --

4 A. No, NPDES permits as long as it's discharged to a water  
5 of the United States.

6 Q. Okay. And so they have the same kind of limitations  
7 that -- or they have limitations just the way Patriot has  
8 limitations in terms of discharge.

9 A. We could talk about "just the same" for a few hours, but  
10 I'll acknowledge that, yeah.

11 Q. They have standards --

12 A. They have limits they have to meet.

13 Q. They have effluent limits they must meet.

14 A. Right.

15 Q. I'm going to try to not -- I think we're talking over  
16 each other, and the court reporter is going to kill me. So  
17 I'm going to try not to, and I'll ask --

18 A. Sure.

19 Q. When you design a municipal wastewater system, what do  
20 you design to?

21 A. The performance standard?

22 Q. Yes.

23 A. The limits in the permit.

24 Q. Okay. When you consider -- it has to take storm water  
25 runoff?

Koon - Cross

1 A. Yes.

2 Q. Do you use in designing those systems a particular year  
3 storm? Five-year? Ten-year? Twenty-five-year?

4 A. I think you do, and I can't recall what it is, and I'm  
5 not -- I don't -- I would expect there would be some widely  
6 acknowledged standard for that, and I can't recall what that  
7 is.

8 Q. It's true, isn't it, that you build a wastewater --

9 A. The frequent -- excuse me, if I could, but frequently  
10 that will be managed by overflows that occur in the collection  
11 system and that you're not concerned with when you design the  
12 treatment plant. Sometimes it's not.

13 Q. But you design to a certain level, don't you?

14 A. Yes.

15 Q. Okay. And if the water -- you heard Mr. Lovett's  
16 questioning earlier. If there's more water than what you  
17 design to, it goes right into the river, doesn't it?

18 A. It's -- if you're industry, you cannot have bypasses  
19 around your treatment facility. I think the same thing  
20 applies to municipalities. I'm fairly sure it does.

21 Q. So you're telling me that there's no -- there are no  
22 circumstances --

23 A. There may be some particular circumstances where  
24 municipalities have negotiated bypasses with regulatory  
25 agencies, but I think that's pretty unusual.

Koon - Cross

1 Q. Okay. So your testimony is that municipal water systems  
2 are designed to capture all water no matter what flow.

3 A. No, no, that's a different matter. Up in the collection  
4 systems, frequently there are overflows in the sewers that  
5 carry high flows directly to the river without treatment.  
6 That's before it gets to the treatment plant area, okay?

7 That's a -- I've been separating that in my mind as a  
8 different issue. That does occur, and that's pretty  
9 controversial and it has been the subject of discussions and  
10 negotiations between municipalities and regulators for years.

11 Q. But that occurs --

12 A. That occurs.

13 Q. -- because the plant can't handle it.

14 A. It occurs because the sewer system is not designed for  
15 it, and it probably also -- the treatment system couldn't  
16 handle it because the designer knows that these overflows  
17 occur.

18 Q. Now --

19 A. I think --

20 Q. All right. Let me ask you, when I took your deposition  
21 on July 2nd, you -- or when we took it -- I think Blair  
22 actually took your deposition -- you told us you were still in  
23 the process of developing your opinions, correct?

24 A. That's correct.

25 Q. Okay. What did you do -- what did you review between

Koon - Cross

1 July 2nd and August 6th that you hadn't reviewed prior to  
2 July 2nd?

3 A. I looked in more detail at the documents that I had at  
4 that time as of July 2nd.

5 Q. Okay.

6 A. I received additional documents and -- wow, I can't  
7 remember exactly what documents I've received since then, but  
8 there have been quite a number.

9 Q. Have you reviewed deposition transcripts?

10 A. Some, yes.

11 Q. Do you remember whose you reviewed?

12 A. Mr. Constant. Perhaps that was the only one for some  
13 reason.

14 Q. Now, I want to talk to you about your estimation of the  
15 amount -- am I correct that overall you believe that the  
16 system should be designed to treat 5150 gallons per minute?

17 A. Patriot has a permit that requires them to treat -- that  
18 requires them to achieve a limit on selenium of 4.7 micrograms  
19 per liter, and implicitly therefore it requires them to treat  
20 all the water that goes through those outfalls that would  
21 prevent it from meeting -- it is necessary for it to meet the  
22 4.7 micrograms per liter. And I specifically disagree with  
23 Mr. McHale this morning about him not knowing how much flow he  
24 needs to treat. He needs to treat whatever is necessary to  
25 meet the permit. The permit has been in effect for four

Koon - Cross

1 years.

2 One of the first questions I would have asked, faced with  
3 that permit in 2006, is, wow, can we get by with treating less  
4 flow? And in order to treat less flow, we've got to know how  
5 much selenium there is during a storm, because if the first  
6 flush concept is applicable here, I don't know it, the  
7 regulators don't know it, I've got to figure that out. And  
8 that still hasn't been figured out.

9 Now, that could -- and if you go to the state and say we  
10 want to -- can we treat less flow, it doesn't surprise me at  
11 all that the state shrugs their shoulders. And I think that's  
12 kind of what they did as he reported it. You tell us how much  
13 flow you can treat and still comply with your permit because  
14 your permit is there and it's in effect, okay?

15 Q. Dr. Koon, were you instructed to make a speech every time  
16 I asked you a question?

17 A. No. If I'm going too long, I'm sorry.

18 Q. Because that's not the question I asked you, sir.

19 A. I'm sorry.

20 Q. I asked you a simple question. Did you or did you not  
21 say that this system was designed to treat 5150 gallons? Did  
22 you say that or not?

23 A. It's not designed -- it -- I'm sorry. Restate your  
24 question because I'm --

25 Q. Okay. I'll restate my question. You, in response to

Koon - Cross

1 Mr. Teaney's questions, you said that you included the base  
2 flow plus the first flush, quibbling with -- your first flush  
3 quibble, put that aside.

4 A. Okay. Okay.

5 Q. The first flush. And you said that Outlet 1, you used  
6 4000 gallons per minute as your design basis. Is that correct  
7 or not?

8 A. I used 4000 gallons a minute as the basis for estimating  
9 the price of a treatment system that would be required to  
10 treat 5150 gallons per minute.

11 Q. So where did you get the number?

12 A. That's the design max numbers that are identified by CH2M  
13 Hill.

14 Q. Does this schedule have anything to do with what kind of  
15 system you're building? (Indicating)

16 A. It could, sure.

17 Q. If it was a much larger system, would that schedule be  
18 longer?

19 A. It could be if it got large enough. That's right.

20 Q. Well, I'm awfully confused because you just testified at  
21 some length as to \$95 million in cost that I thought you said  
22 that was the cost of the system. And you're merely picking  
23 gallons per minute and estimating cost?

24 A. Yes, and I think -- I think that's the same thing. I'm  
25 not sure that we have a disagreement here.

Koon - Cross

1 Q. So you're not offering an opinion that they ought to  
2 build a system -- that they ought to build a system that can  
3 treat 4000 gallons per minute.

4 A. No, I think that's the source of our problem. I  
5 estimated the cost of a system to treat 5150 gpm, but I'm not  
6 saying that that would comply with the permit --

7 Q. Okay. Because you don't know.

8 A. -- okay? I don't know, yeah.

9 Q. So you don't -- you come in and criticize CH2M Hill,  
10 criticize Patriot, but you don't have an opinion as to the  
11 system they should build? I mean I thought that's what you  
12 came here for.

13 So it's not your opinion -- it is not your opinion that  
14 they should build a either single system or a combined system  
15 to treat 4000 gallons per minute at Outlet 1, 800 at Outlet 2,  
16 and 3 -- 350 at Outlet 3. That's not your opinion.

17 A. My opinion is they need to build a system to treat to be  
18 in compliance with their permit.

19 Q. And you don't know what that system would be. You are  
20 not offering that opinion.

21 A. I have no basis for that opinion as to the exact flow  
22 that would be required to be treated.

23 Q. Okay.

24 A. That's correct.

25 Q. That's a difficult question, isn't it?



Koon - Cross

1 A. It is, but it's -- I won't make a speech, but I could,  
2 okay?

3 Q. You owe me one. So we'll call it even.

4 All right. Now, I take it that you have -- it appears to  
5 me that you thought CH2M Hill's report of January 26, 2009 was  
6 a pretty good review of the available technologies.

7 A. I can't remember the exact title, but those reports were  
8 I think generally good, yes.

9 Q. I don't know if you have it in front -- I'm going to show  
10 it to you.

11 A. Sure. Conceptual treatment alternatives report, yes.  
12 Okay.

13 Q. Doctor, I didn't -- I don't intend to -- if you need me  
14 to put this in front of you, I will, but I just want to --

15 A. Sure.

16 Q. CH2M Hill reviewed and reported in January 26 of 2009 a  
17 number of technologies. Is that fair?

18 A. That's correct.

19 Q. And do you agree with the body of technologies that they  
20 selected for review?

21 A. Yes.

22 Q. Okay. And that included, I believe, in this report an RO  
23 system, correct?

24 A. That's my recollection, yes.

25 Q. It included -- they discussed ZVI, correct?

Koon - Cross

1 A. That's my recollection, they did, yes.

2 Q. And I know you don't believe that the ZVI system is  
3 effectively designed or working at any of the outlets. Is  
4 that a fair generalization?

5 A. That's -- I agree.

6 Q. But you would agree that the principle that steel wool  
7 iron will remove selenate, that is a soundly based scientific  
8 principle, isn't it?

9 A. ZVI removes selenium. I agree with that, yes.

10 Q. And you, in fact, have used ZVI or some equivalent on a  
11 project in the past, haven't you?

12 A. Wow, I don't recall that. Did I say that?

13 Q. Yeah, I thought you did.

14 A. I know it's been used, especially in in-situ systems, and  
15 I think I've been part of projects that used it in in-situ  
16 systems.

17 Q. In other words, the use of ZVI to remove selenium in this  
18 coal mine in our circumstance might be a new use for it, but  
19 the principle of using iron to remove selenium isn't anything  
20 new.

21 A. The principle of using iron to remove metals --

22 Q. Okay.

23 A. -- is not new. Selenium is newer. So, again, I'm not  
24 trying to pick nits. I just don't know what's coming next.

25 Q. Don't worry about what's coming next.

Koon - Cross

1 A. Oh, I've got to.

2 Q. I'm not surprising you.

3 A. Okay.

4 Q. Trust me. That's true of all of these technologies,  
5 isn't it? I mean RO and all these others, they are  
6 technologies that have been used in other circumstances but  
7 are now being moved over because the same principles should  
8 apply to selenium, correct?

9 A. That's correct, but there's more demonstrated experience  
10 with biological processes and reverse osmosis than with ZVI in  
11 my opinion.

12 Q. Okay. So on the hierarchy of things, you would put  
13 biological and membranes up above ZVI at some point.

14 A. Yes.

15 Q. Because you're not telling this Court that ZVI wouldn't  
16 be effective at a very low flow, are you?

17 A. I would have to see that as a specific example to agree  
18 with it. As a principle, it works. As a process to  
19 consistently achieve 4.7, I haven't seen it. The smaller the  
20 flow is, the better chance you've got if you want a passive  
21 system and if you want one where the management of your flows,  
22 splitting and combining of flows is not a significant design  
23 issue.

24 Q. You have experience in doing -- in developing low-tech  
25 applications in certain circumstances, don't you, sir?

Koon - Cross

1 A. Some, yes.

2 Q. I think you told us about a project that you had an area  
3 that was out in the middle of nowhere, so you developed kind  
4 of a simple wheel in an effort to provide treatment that would  
5 be very simple.

6 A. That's correct.

7 Q. And I think on your CV you specifically kind of gleaned  
8 out that it's a low-tech approach.

9 A. Okay, yes.

10 Q. And I thought it might be in West Virginia because one of  
11 the concerns was that people would use something for target  
12 practice.

13 A. Yes.

14 Q. Do you recall that being an issue?

15 A. Yes. Uh-huh, yeah.

16 Q. Okay. So going back to the January 26th report of CH2M  
17 Hill, this is a good body of alternatives for consideration in  
18 removing selenium, correct?

19 A. Yes, sir.

20 Q. Do you agree with the recommendation of proceeding to  
21 pilot projects?

22 A. Yes.

23 Q. Okay. So -- and I understand we do not agree about how  
24 fast things were done.

25 A. That's correct.

Koon - Cross

1 Q. But to proceed from the concept to the installation,  
2 you've got to have a pilot in between -- would you agree? --  
3 in this situation.

4 A. In this situation, it's a very good idea, yes.

5 Q. Because I'm sure there's some processes where you just --  
6 you know what you need, you order it, and you hook it up --

7 A. Yeah.

8 Q. -- correct? We're not there yet in this situation.

9 A. That's correct.

10 Q. Okay. So you agree, putting aside timing, piloting RO,  
11 VSEP, FBR were appropriate things to do.

12 A. Yes.

13 Q. Because once you do the pilot -- and is it important that  
14 you do a pilot in the field, kind of -- you've got a pilot,  
15 where you're going to use it?

16 A. That's inherent in my definition of a pilot test. It  
17 takes the water as it's being -- the wastewater as it's being  
18 generated and puts it through the pilot-scale treatment  
19 system.

20 Q. So to get from real FBR work to let's design, construct,  
21 and install a full-scale FBR, you've got to have a pilot;  
22 fair?

23 A. I wouldn't say got to, but I would say it's a very  
24 good -- a very good way to proceed and more advisable here  
25 than it would be in some other situations.

Koon - Cross

1 Q. And you would make -- you would have made the same  
2 recommendation these guys did; go ahead with --

3 A. Yeah.

4 Q. -- the pilots.

5 A. Uh-huh, yeah.

6 Q. Okay. Thank you. Now, I want to make sure I understand  
7 your testimony about cost, and I tried to write down some  
8 notes. It seems to me like you were at, to treat all four  
9 outlets, assuming you need equalization in the form of an  
10 impoundment, you're at 95 million?

11 A. That's correct.

12 Q. Because in your deposition on page 9, you said, "If I  
13 take the design max flows, which, again, would be treating all  
14 the base flows, plus the first inch of runoff from a 24-,  
15 25-year storm and estimate costs for FBR treatment at each of  
16 those four sites, I come up with a cost of right at  
17 80 million."

18 A. That's right.

19 Q. Is the difference the equalization?

20 A. Well, one difference is I corrected myself, and I had not  
21 gone to the Excel spreadsheet. I'd done it in some manual  
22 numbers. And 80 million was too high.

23 Q. Okay. So you went down --

24 A. Went down.

25 Q. -- down on the cost but then back up with equalization?

Koon - Cross

1 A. Well, equalization was one factor. The other factor was  
2 CH coming back to Patriot and saying, oops, it's going to cost  
3 \$40 million to treat 2200 gpm.

4 Q. You were present for at least part of that.

5 A. Yeah.

6 Q. So do you -- you've talked about these costs in general.  
7 Do I take it that you have a more detailed calculation  
8 somewhere?

9 A. Yes.

10 Q. Did you, in making your calculation, did you use other  
11 than your kind of -- I think you already described your  
12 calculation as it relates to equalization, but were all the  
13 other cost numbers derived from the CH2M Hill report?

14 A. The base cost numbers that I used were CH2M Hill  
15 estimates, yes.

16 Q. Okay. Reputable company?

17 A. Yes.

18 Q. You've worked with them in the past?

19 A. Worked with them, competed against them.

20 Q. Okay. On other sides of this case?

21 A. Hired some of their employees. They've hired some people  
22 that I know. Yes.

23 Q. Now, you reviewed the CH2M Hill FBR report, correct?

24 A. That's correct.

25 Q. You substantially agree with their conclusion that FBR is

Koon - Cross

1 a viable technology --

2 A. Yes.

3 Q. -- to be employed?

4 A. Yes.

5 Q. I believe you would also, in terms of that range of  
6 things you would pick, you would include RO and ABMet as well?

7 A. That's correct.

8 Q. Okay. As an engineer, it's true, isn't it, that cost is  
9 a factor in systems that you design and recommend?

10 A. Cost is always a factor; sometimes more, sometimes less.

11 I could -- go ahead.

12 Q. I'll ask you a question and you'll get a chance.

13 A. Yes.

14 Q. Given three systems that will work approximately equally,  
15 is it typical that you look for the lowest cost system that  
16 will work?

17 A. Yes. That's a fairly simplistic statement that you've  
18 made, but you're correct insofar as --

19 Q. I'm a simple guy, Doctor. And that's not in this  
20 courtroom. That's out in the real world.

21 A. The real world.

22 Q. That's out of 38 years in your business --

23 A. Sure.

24 Q. -- of preparing and making recommendations.

25 A. Yes.



Koon - Cross

1 Q. Now, there are times when you don't recommend the lowest  
2 cost, correct?

3 A. That's correct.

4 Q. Okay. In this case, it looks like CH2M Hill has come  
5 with the conclusion that they believe that FBR is the lowest  
6 cost alternative.

7 A. That's correct.

8 Q. Do you share that conclusion?

9 A. Yes. They did the estimates. I've reviewed the  
10 estimates, and I think they're reasonable and consistent with  
11 the amount of engineering that's been done.

12 Q. There's a certain amount of legwork that goes into making  
13 an estimate, correct?

14 A. Yes.

15 Q. You're satisfied that they did the appropriate legwork  
16 and that --

17 A. Yes.

18 Q. -- you can live with the estimates.

19 A. Yes.

20 Q. Okay. So getting back to your schedule, I think you'd  
21 agreed that a swing to two years, six months is fairly  
22 consistent and you could --

23 A. I don't think we have any issues on schedule, no.

24 Q. Okay. Now, where -- when you do a schedule, put aside --  
25 I understand your opinion about deadlines, but when you do a

Koon - Cross

1 schedule, do you build in -- I think you commented on this.

2 Do you ever build in a percentage chance of delay to reflect  
3 things that are beyond your control?

4 A. I'm not a professional scheduler, and people like that,  
5 project controls people, exist just to get it right on big  
6 important projects, so -- and I use Excel and not Microsoft  
7 Project to do these things. But my understanding is there's  
8 an early start date and a late start date, and frequently  
9 those things will be used to apply some cushion in a schedule.

10 Q. So if you took -- and that's the cushion that you hope  
11 takes care of the RO unit that gets, you know --

12 A. That's right.

13 Q. -- driven off the road.

14 A. Yeah.

15 Q. If you skinny the schedule down, in part aren't you  
16 eliminating your swag, your extra time?

17 A. Sometimes if you're faced with the issue of, okay, here's  
18 your schedule, we've got to do it in less time, yes, that's  
19 one of the things that comes out, are some of those cushions.  
20 There's other things that you would do also.

21 Q. Okay. Yeah. And I'm not taking away from that.

22 A. Sure.

23 Q. So you would try to do more things in parallel and  
24 eliminate your cushions.

25 A. Right.

Koon - Cross

1 Q. Raising a little bit the risk that if anything goes  
2 wrong, your schedule goes off.

3 A. That's right.

4 Q. Fair statement?

5 A. Yes.

6 Q. Now, have you ever -- and I think I know the answer to  
7 this, but you've not ever designed a system to treat water at  
8 a surface mine, whether West Virginia or anywhere else,  
9 correct?

10 A. That's correct.

11 Q. Okay. And, in fact, you can't identify for us any full-  
12 scale water treatment systems currently in use in coal mines  
13 in West Virginia successfully treating to the selenium limit,  
14 correct?

15 A. That's correct. I think that's an unnecessarily narrow  
16 question, but I agree.

17 Q. Well, can you identify systems at any surface mine in  
18 Appalachia where they -- you know, I don't want to limit it to  
19 West Virginia, but what I'm getting at is the circumstance  
20 that my clients have, which is a surface mine.

21 I want to know if you're aware of anyone who has  
22 installed a full-scale treatment system that is removing  
23 selenium to the permit limit.

24 A. And I've answered no, I don't.

25 Q. Okay. And you're not aware of any guidance from either

Koon - Cross

1 the EPA or the West Virginia DEP as to systems, are you?

2 A. No.

3 Q. Okay. And --

4 A. Of course, that's not their responsibility either.

5 Q. Okay. Okay. Well, and there's no -- well, the EPA puts  
6 out best available technology. There's no best available  
7 technology out for selenium.

8 A. That's right, best available technology based standard --

9 Q. Okay.

10 A. -- and this is a water quality based permit, and so those  
11 two don't quite mix. I won't -- I'll try not to make a  
12 speech.

13 Q. Okay. We're getting along better, aren't we, Doctor?

14 Have you -- have you ever -- let's throw coal mines out  
15 of it. I don't want to quibble. Have you ever designed a  
16 treatment system to reduce selenium to below 5 parts per  
17 billion for any industry?

18 A. No.

19 Q. Okay. When you talked earlier about the mature  
20 technologies and the fact that membranes and other things have  
21 been used for years, is it fair to say that using them for  
22 selenium is relatively new?

23 A. Relatively new, I agree, yes.

24 MR. HURNEY: Your Honor, if I could have a moment.

25 THE COURT: Certainly.

Koon - Cross

1 BY MR. HURNEY:

2 Q. We talked about guarantees. As you sit here today, you  
3 can't say that at the end of \$90 million that anyone can  
4 guarantee that a system will reduce selenium to below 5 parts  
5 per billion. And I used the term guarantee.

6 A. Yeah. Repeat that. I'm not trying to pick nits, but I  
7 want to make sure I understand.

8 Q. No, that's all right. It's a long day. You're entitled  
9 to have questions you can answer, sir.

10 I know that you have discussed at some length you have to  
11 take risks, but we're talking about a \$95 million project in  
12 your mind. As you sit here, you certainly couldn't guarantee  
13 that at the conclusion of the project, that the process,  
14 whether FBR or RO, would successfully treat selenium and put  
15 Patriot at their permit limit or below their permit limit once  
16 completed.

17 A. I agree --

18 Q. Okay.

19 A. -- with conditions.

20 Q. Now, and you're not giving any opinion as to what flow  
21 Patriot should design to, correct?

22 A. My opinion is they need to meet their permit.

23 Q. Okay.

24 A. My opinion also is that I don't know and I don't -- and  
25 they don't know what flow they need to treat to meet their

Koon - Cross/Redirect

1 permit.

2 Q. So you don't, in terms of trying to design a system,  
3 you're not offering that opinion.

4 A. No.

5 MR. HURNEY: Okay. Okay. I have no further  
6 questions. Thank you, Your Honor.

7 THE COURT: All right. Any redirect?

8 MR. TEANEY: Yes, Your Honor.

9 REDIRECT EXAMINATION

10 BY MR. TEANEY:

11 Q. Dr. Koon, in preparing your 110-week schedule, did you  
12 look to other schedules of other projects that you have worked  
13 on or that other engineers have worked on that you're  
14 associated with?

15 A. Yes, I did.

16 Q. Okay. So those -- it was more than just judgment. It  
17 was comparison to other projects. Is that correct?

18 A. More than just comparison?

19 Q. I'm sorry. More than just best professional judgment.  
20 It was a comparison to other projects and schedules that had  
21 been implemented.

22 A. Yes.

23 Q. Is that correct?

24 A. Yes --

25 Q. Okay.

Koon - Redirect

1 A. -- projects that I had worked on just to refresh my  
2 memory of how much time things take -- took.

3 Q. Okay. Do you still have your schedule up there in front  
4 of you?

5 A. Yes.

6 Q. Looking at that, I'm trying to figure out whether it's  
7 front-end or back-end loaded. Is the first part of the  
8 work -- like if you would divide it into quarters, would you  
9 say 15 percent of the work would be completed in the first  
10 quarter?

11 A. How do you measure work? Are you talking about hours?  
12 Are you talking about dollars of expenditure?

13 Q. Dollars. I'm sorry. Dollars.

14 A. 15 percent of the budget spent in the first quarter.

15 Q. Yes.

16 A. Reasonable.

17 MR. HURNEY: Your Honor, this is a new opinion and  
18 it's outside the scope of my cross-examination.

19 MR. TEANEY: There was a lengthy cross-examination  
20 about the schedule. I'm trying to better understand the  
21 schedule. And also though Dr. Kavanaugh, who's one of our  
22 later experts, will testify about the expected percentages  
23 that would be spent in a particular quarter during the  
24 project --

25 THE COURT: Well, this witness hasn't offered any

Koon - Redirect

1 testimony about that until just now. So I'm going to sustain  
2 the objection.

3 MR. TEANEY: Understood, Your Honor. I'd like to  
4 mark an exhibit. I guess we're on Plaintiff's 63.

5 May I approach?

6 THE COURT: You may.

7 MR. TEANEY: I have an extra copy for the Court.

8 BY MR. TEANEY:

9 Q. Dr. Koon, take a minute to review that schedule.

10 A. Okay, taken.

11 Q. Have you ever seen this document before?

12 A. I'm not sure. If this is the schedule that we worked on  
13 last week, then I have seen it or something similar to it.

14 MR. HURNEY: Your Honor, I'm willing to stipulate  
15 that this is the schedule. One of the CH2M Hill engineers did  
16 this on a computer as a result of a bunch of discussions, and  
17 I'll stipulate that this is, in fact, a copy of that schedule  
18 that I provided --

19 THE WITNESS: This is what we had on the screen  
20 during our meeting? This is what --

21 MR. HURNEY: Yes.

22 THE WITNESS: -- we were projecting on the screen  
23 working on during the meeting? Yes, I have seen it, then.

24 BY MR. TEANEY:

25 Q. Did you engage in conversations with engineers from CH2M



Koon - Redirect

1 Hill in devising this schedule?

2 A. Yes.

3 Q. There's a lot of cushion that was built into this  
4 schedule on compromise; is that right?

5 A. You say a lot? I'll say some.

6 Q. Some? There was some cushion built in?

7 A. Yes.

8 Q. Can we give an example of where some of that cushion was  
9 built in?

10 A. I had longer -- more time required -- more time scheduled  
11 for detailed engineering than they did, and we used my  
12 numbers, not theirs. So if -- assuming if they do the design,  
13 I'm assuming they could do it in less time than we have in the  
14 schedule.

15 Q. Okay. So you would have predicted a longer period of  
16 time for detail design than --

17 A. Somewhat.

18 Q. -- they had proposed?

19 A. Yeah.

20 Q. So that's one example of where some cushion and  
21 compromise was added.

22 A. Right.

23 Q. To your knowledge did -- strike that. Do you still  
24 believe that it could be done faster than in two and a half  
25 years?

Koon - Redirect

1 A. Yes. Well, two parts of that. A, yes, I believe it  
2 could be done in less than two and a half years. B, they have  
3 revised their cost estimate to the \$40 million. I don't know  
4 the details of why they have done that. If that's based on  
5 some complications that they anticipate, then that might  
6 change the schedule a bit. I think still -- but based on  
7 what I know now, yes, it could be done in two and a half  
8 years.

9 Q. And you're not privy to what went into CH2M's thinking in  
10 its revisions of the cost estimates, are you?

11 A. No. No, I'm not.

12 Q. Okay.

13 A. I've done a project similar to this in one and a half  
14 years.

15 Q. In one and a half years?

16 A. Yes. Actually, one year, seven months, I believe.

17 Q. Okay. So, nonetheless, you believe there's some cushion  
18 in the two-and-a-half-year schedule; is that correct?

19 A. Yes.

20 Q. Okay. Do you have experience with what are called CSOs?

21 A. Not much.

22 Q. Okay.

23 A. I know what they are.

24 Q. Have you had any experience with CSOs?

25 A. Yes.

Koon - Redirect

1 Q. Okay. What is a CSO?

2 A. Combined sewer overflow.

3 Q. Okay. Those aren't permitted under the Clean Water

4 Act --

5 MR. HURNEY: Your Honor, I object. He says he kind  
6 of knows about them. I don't think that brings in the  
7 foundation of expertise.

8 THE COURT: I agree. I don't think you've  
9 established a foundation for asking him opinions about CSOs  
10 based on his response.

11 BY MR. TEANEY:

12 Q. I'm sorry. Have you worked on a CSO?

13 A. Yes. I'm familiar with them. I'm familiar with the  
14 technologies that are used to treat them and familiar with the  
15 concepts that lead to the regulatory problems involved with  
16 them, so I, you know --

17 Q. And can you identify one that you've worked on?

18 A. Gee, there was a guy I worked with a number of years ago  
19 that developed a treatment technology for treating CSOs, the  
20 overflows from combined sewers, and I worked with him on that  
21 review of the -- and the development of that technology.

22 MR. TEANEY: Your Honor, I don't want to get cross-  
23 wise with your ruling. I believe that we're trying to lay a  
24 foundation here, and this goes directly to some of the things  
25 that were brought up on cross --

Koon - Redirect

1 THE COURT: Go ahead.

2 MR. TEANEY: -- about municipal treatment. Thank  
3 you, Your Honor.

4 BY MR. TEANEY:

5 Q. Combined sewer outflows -- or, I'm sorry -- overflows,  
6 are those the result of large fluctuating flows as a result of  
7 storm events?

8 A. Yes.

9 Q. Is that because you've got a municipal sewer system  
10 combined with storm drains and other sources of storm water?

11 A. That's right, sewer systems designed to carry sanitary  
12 wastewater and storm water.

13 Q. And in rain events, the capacity gets overwhelmed and  
14 there's an overflow.

15 A. That's correct.

16 Q. Okay. Are these permissible under the Clean Water Act,  
17 if you know?

18 A. I don't think they are. I think there are some  
19 negotiated settlements, but I'm not sure of that.

20 Q. Most municipal systems that are combined, do you know  
21 whether those were built before the Clean Water Act was  
22 passed?

23 A. Yes. That's the problem. These are old systems.

24 Q. So are new systems being built that would allow combined  
25 sewer overflow?

Koon - Redirect

1 A. I seriously doubt it. I would expect that all municipal  
2 systems are being designed as separate systems, one sewer to  
3 handle the municipal wastewater and one to handle -- a  
4 separate system to handle the storm water.

5 Q. Thank you. I believe Dr. -- I've promoted everyone now.  
6 Congratulations, Dr. Hurney.

7 Mr. Hurney asked you if -- you don't know what system or  
8 what flow to design to, and I believe you said no, and I'm  
9 curious why not.

10 Do you have -- has anyone gathered the data that's needed  
11 to make that determination?

12 A. No, they haven't.

13 Q. When should that data have been gathered in your  
14 opinion?

15 A. In my opinion, that would have been one of the first  
16 tasks to take on after the permit was issued in 2006.

17 Q. And what sort of data would you need?

18 A. You'd need corresponding flow data during the -- flow  
19 data and selenium concentrations.

20 Q. But that hasn't been done yet, has it, to your knowledge?

21 A. That's correct. In the absence of that data, I think  
22 it's fair to assume you would have to treat all of the flow  
23 out those outfalls to meet the permit.

24 Q. But CH2 designed a design max basis for design, and  
25 that's what you based your cost estimate on; is that correct?

Koon - Redirect

1 A. That's right. It was an available number.

2 Q. It would have been nice to have other more detailed  
3 numbers based on actual data?

4 A. Yes.

5 MR. TEANEY: Okay. I want to use an exhibit that's  
6 been admitted. It's Joint Exhibit 5. I have a marked-up  
7 copy. I think I could show it to the witness. Okay. But  
8 it's already in evidence. I don't believe the page that I  
9 want to refer to is marked.

10 THE COURT: Which exhibit?

11 MR. TEANEY: This is Joint Exhibit 5. May I  
12 approach, Your Honor?

13 THE COURT: You may. I have my copy, the Court  
14 copy. It hasn't been marked. Go ahead.

15 MR. TEANEY: Yeah. He can use this, and then that  
16 way you can have it as well.

17 THE COURT: What page?

18 MR. TEANEY: Page 39.

19 THE WITNESS: The number on the top.

20 BY MR. TEANEY:

21 Q. Dr. Koon, I believe you testified you reviewed this  
22 document in preparation for your testimony today; is that  
23 correct?

24 A. That's correct.

25 Q. And this is the Treatment Alternatives Evaluation that

Koon - Redirect

1 CH2M Hill performed for Patriot; is that correct?

2 A. Yes.

3 Q. Did they evaluate ZVI?

4 A. Yes.

5 Q. And then they did a cost estimate for ZVI, didn't they?

6 A. That's correct.

7 Q. For both variants of ZVI, the ShipShaper and the MATRIC,  
8 if you recall?

9 A. That's correct.

10 Q. Were their cost estimates based on a passive design using  
11 ZVI or an active design using ZVI?

12 A. I don't -- I'm virtually certain it was based on an  
13 active design, but I don't recall them specifying that. And  
14 if you look at their estimate and their design, it must be an  
15 active design.

16 Q. In looking at their page 39, what sort of things indicate  
17 to you that it's an active design?

18 A. They've got electrical power, they've got buildings,  
19 they've got instrumentation controls, which certainly require,  
20 you know, activity to keep those things operating. Those are  
21 the easiest indications to see.

22 Q. Have you seen anything that indicate that CH2 has  
23 embraced or endorsed the idea of a passive ZVI system at any  
24 flow?

25 A. Don't recall any.

Koon - Redirect

1 Q. If you were asked, could -- would you design a passive  
2 ZVI system at Titanic?

3 A. That would depend on how we resolved the flow questions,  
4 but I seriously doubt it.

5 Q. Okay.

6 A. I don't see how that could be done and respond to the  
7 flows that -- and the variation of flows that I see there.

8 Q. In any event, would you be able to design and build such  
9 a system for Titanic and get it running in two or two and a  
10 half years?

11 A. If I thought it would work, I think I could do it in two  
12 to two and a half years. I've also testified that in my  
13 opinion ZVI is an emerging technology and that in this case,  
14 because there's a deadline imposed on this project, you need a  
15 project -- a process that's developed.

16 Q. Well, I'm glad you mentioned that. I wanted to come back  
17 to that. I believe that Mr. Hurney used a -- I think he  
18 described it as a hierarchy and talked about different levels  
19 and biological and membranes being at one level on the  
20 hierarchy and ZVI being on another.

21 Are they on the same hierarchy or are they in completely  
22 different genres?

23 A. Well, we could discuss that for the rest of the day.

24 Q. Let's try not to.

25 A. But certainly there is -- they're not at the same level



Koon - Redirect

1 of ready -- they're not -- if you ask the question are these  
2 ready to be applied in real treatment situations and certainly  
3 in demanding treatment situations, they're not on the same  
4 level.

5 Q. I asked you the question about Titanic. What if someone  
6 asked you to design a passive ZVI system for Hobet 22 based on  
7 your analysis of the DMR flows? Would you do that?

8 A. No. Some implicit in my answer here, and that is I have  
9 not seen ZVI consistently meet the 4.7 microgram per liter  
10 selenium limit; and until and unless that's possible, then I  
11 don't think these other things matter. Okay. I'm sorry.  
12 I --

13 Q. And that's either as an active system or a passive  
14 system.

15 A. Yes, that's right. That's right.

16 Q. You testified, I believe, about a pyrite mine in  
17 Virginia --

18 A. Yes.

19 Q. -- where you deployed a low-tech solution. Did that low-  
20 tech solution ultimately work?

21 A. I was not associated with later phases of the project. I  
22 went -- changed engineering companies. My understanding is  
23 they had problems with the waterwheel.

24 Q. And did they eventually have to go to a more  
25 sophisticated treatment?

Koon - Redirect

1 A. I don't know.

2 Q. Okay. If a low-tech solution doesn't work, though, you  
3 would move to a more sophisticated treatment; is that right?

4 A. Certainly, yes. Only apply the low tech where it was  
5 appropriate to the application.

6 Q. I believe that Mr. Hurney asked you if it was appropriate  
7 to pilot all these technologies. Do you have an opinion as to  
8 whether this should have been piloted concurrently or  
9 sequentially?

10 A. Yes.

11 Q. What is your opinion?

12 A. My opinion is, given the Court-imposed deadlines, that  
13 these things should -- whatever piloting was going to be done  
14 should have appropriately and responsibly been done in  
15 parallel.

16 Q. Mr. Hurney asked you about CH2M Hill's cost estimates.  
17 These were Class 5 estimates; is that correct?

18 A. Yes.

19 Q. And so when you said that you could -- I believe that  
20 your phrase was, "I can live with the estimates." You can  
21 live with them in the context of them being Class 5 estimates,  
22 correct?

23 A. Yes.

24 Q. And that is at a range of plus 500, minus 50; is that  
25 correct?

Koon - Redirect

1 A. I think you said plus 500. It's plus 100.

2 Q. I apologize here. Plus 100, minus 50. Okay.

3 You were asked if you've ever designed a system to reduce  
4 selenium below 5 parts per billion. Let me ask you in a  
5 different way. Have you ever designed a system to reduce a  
6 difficult pollutant to a very low level?

7 A. Yes, sir.

8 Q. And what pollutant and what level?

9 A. 1 chlordioxane. And I don't remember the level. I think  
10 it was tenths of milligrams per liter or a hundred or two  
11 hundred micrograms per liter, elemental phosphorous to half a  
12 part per billion, I think.

13 Q. Half a part per billion?

14 A. Point five parts per billion, I think. It has a very  
15 high aquatic toxicity.

16 Q. You were asked about the risk and whether you would  
17 guarantee -- I believe it was FBR -- or these technologies.

18 A. Yes.

19 Q. Do you have a -- you know, you didn't want to provide a  
20 guarantee, but do you have a reasonable level of confidence  
21 that FBR would work?

22 A. Sure. That's a different question. I'm not in a  
23 position to provide a guarantee on that system.

24 Q. Because you're not a vendor.

25 A. It would be irresponsible for me -- it would be

Koon - Redirect

1 financially irresponsible for me to do it. I don't have  
2 anything to do with that system.

3 Q. But if you were to measure the risk --

4 A. I have confidence that the system will work.

5 Q. If you were to measure the level of risk that someone  
6 would take to install FBR to comply to 5 parts per billion and  
7 analogize to some level of risk that we might take in everyday  
8 life, can you think of an analogy?

9 A. Well, sure. Go out and buy a car. Say you buy a Toyota.

10 MR. HURNEY: I object to him testifying to risk  
11 assessment. That's not within his --

12 THE COURT: Well --

13 THE WITNESS: No, I'm not talking risk assessment.

14 THE COURT: -- I think the witness already testified  
15 about this area anyway, so --

16 MR. TEANEY: Okay.

17 THE COURT: -- this is getting --

18 BY MR. TEANEY:

19 Q. I guess my final question on that point related to the  
20 questions you were asked on cross-exam regarding the risk or  
21 the guarantee on FBR. This is CH2M Hill's idea, isn't it, to  
22 use FBR?

23 A. Yes, it's my understanding.

24 Q. Is CH2M Hill the type of company that would lead a client  
25 down the garden path and recommend them do something that

Koon - Redirect

1 wouldn't work?

2 A. No, no.

3 Q. Okay.

4 A. First of all, they're very experienced in biological  
5 systems. They're very experienced in biological systems and  
6 denitrifying systems, which is the core metabolism technology  
7 in biochemistry that's related here. And, of course, they've  
8 got a very big reputation that they've got to uphold. And I  
9 think, if anything, they'd be fairly conservative in the  
10 technologies they would offer.

11 Q. Okay. Here's my final, final question. You were asked  
12 about surface runoff from mining and coal mines in West  
13 Virginia. Do you think that surface runoff from mining  
14 presents any unique problems that are not amenable to standard  
15 traditional treatment methods?

16 A. This project has its challenges, but it's not  
17 inconsistent with the other challenges that I've seen on other  
18 projects, including ones with surface runoff.

19 MR. TEANEY: Thank you. No further questions.

20 THE COURT: All right. Recross?

21 RECROSS EXAMINATION

22 BY MR. HURNEY:

23 Q. You testified about CH2M Hill's Class 5 cost estimate.  
24 Where would you classify your cost estimate?

25 A. It was an extension of their Class 5 estimates, and

Koon - Recross

1 there's nothing lower than a Class 5 estimate.

2 Q. Okay.

3 A. So I think I'd have to classify it as a Class 5 estimate.

4 Q. Okay. And if you look at the screen, I just put up one  
5 of these. In the CH2M Hill January 26, 2009 report, they have  
6 a page of detailed costs data for each project. Is that the  
7 data that you looked at?

8 A. Yes.

9 Q. Okay.

10 A. That's among the data I looked at.

11 Q. You've not provided us with a detailed breakdown of your  
12 data, correct?

13 A. That's correct.

14 MR. HURNEY: Your Honor, I don't have any further  
15 questions.

16 THE COURT: All right. Anything else?

17 MR. TEANEY: Nothing, Your Honor.

18 THE COURT: Thank you, Doctor. You're excused.

19 All right. Call your next witness.

20 MR. LOVETT: Mark Schroeder. I think they're going  
21 to have to go get him.

22 THE COURT: All right.

23 MR. LOVETT: He's the CFO from Patriot.

24 MR. TEANEY: A housekeeping measure while they're  
25 getting him, if it please the Court. I'd like to move the

Schroeder - Direct

1 admission of Plaintiff's 63, which is the schedule we used on  
2 redirect.

3 MR. HURNEY: No objection.

4 THE COURT: It's admitted.

5 MR. TEANEY: Thank you.

6 THE COURT: All right. Sir, if you'll please step  
7 up here, my clerk is going to swear you in.

8 MARK SCHROEDER, PLAINTIFF'S WITNESS, SWORN

9 DIRECT EXAMINATION

10 BY MR. LOVETT:

11 Q. Good afternoon, Mr. Schroeder.

12 A. Good afternoon.

13 Q. Would you state your name for the record, please.

14 A. Mark Schroeder.

15 Q. And, Mr. Schroeder, what is your job?

16 A. I am chief financial officer, Patriot Coal.

17 Q. And how long have you been chief financial officer of  
18 Patriot Coal?

19 A. Since November of 2007.

20 Q. And before that, what was your job?

21 A. I worked at Peabody Energy for the period of October 2000  
22 through October 2007, most recently as -- I think my title was  
23 something like president of Peabody China.

24 Q. You were in China?

25 A. Yes, sir.

Schroeder - Direct

1 Q. And is your -- are you a CPA?

2 A. Yes, I am.

3 Q. And you have an undergraduate degree in accounting?

4 A. Yes, I do. It is administration, specialization in  
5 accounting.

6 Q. Okay. And you're a CPA as well.

7 A. Yes, I am.

8 Q. And do you live in St. Louis?

9 A. I live in Illinois.

10 Q. Oh, you live in Illinois.

11 A. Yeah.

12 Q. Sorry. Close to St. Louis?

13 A. Yes.

14 Q. And your office is in St. Louis.

15 A. Yes.

16 Q. And I'm not going to take you through your work history,  
17 but at one point you were an auditor for a large accounting  
18 firm; is that true?

19 A. Yes.

20 Q. What accounting firm was that?

21 A. Arthur Young, which has been merged into Ernst & Young.

22 Q. And I think you also were -- did you serve as an auditor  
23 in another position as well?

24 A. I worked as an internal auditor for McDonnell Douglas for  
25 a brief period.



Schroeder - Direct

1 Q. Okay. And what are your duties as CFO at Patriot?

2 A. Well, involved in a lot of the financial functions within  
3 the company. So that involves the accounting, treasury  
4 functions, income tax, investment, IT, information technology,  
5 purchasing, investor relations.

6 Q. And you're responsible for the quarterly and annual  
7 reports; is that right?

8 A. I do get involved in the quarterly filings to the SEC and  
9 the annual filing to the SEC, in addition to a number of other  
10 people.

11 Q. Are you the person that's in charge of those filings,  
12 though?

13 A. Ultimately I sign the form 10-Q and the form 10-K.

14 Q. Do you have a fiduciary responsibility to your  
15 shareholders to make sure those reports are accurate?

16 A. Yes, I do.

17 Q. And as CFO of Patriot do you spend a portion of your time  
18 working on selenium-related issues?

19 A. Yes, I do.

20 Q. I think in your deposition you said approximately 5 to  
21 10 percent of your time is related to selenium. Is that  
22 accurate?

23 A. I believe that's my estimate.

24 Q. And that's only been the case since Patriot acquired  
25 Magnum; is that right?

Schroeder - Direct

1 A. Since the period of time that Patriot was considering the  
2 acquisition of Magnum.

3 Q. I understand. And you were CFO at the time that Patriot  
4 first considered acquiring Magnum?

5 A. Yes, I was.

6 Q. And when was it that Patriot acquired Magnum?

7 A. The transaction closed in July of 2008.

8 Q. Were you aware of Magnum's selenium liabilities at the  
9 time?

10 A. Yes.

11 Q. And did you agree to take on those liabilities of Patriot  
12 when you absorbed Magnum?

13 A. Patriot acquired the common stock of Magnum. So in  
14 acquiring the common stock, Patriot assumed certain  
15 liabilities in addition to assuming the assets.

16 Q. So, yes, you did assume Magnum's liabilities; is that --

17 A. It was part of the acquisition of the common stocks. So  
18 coming with the common stock would be the assets and the  
19 liabilities.

20 Q. Okay. Now, at the time you acquired Magnum, what did you  
21 estimate Magnum's selenium liabilities to be?

22 A. I don't recall the exact amount back at that time. I  
23 think I indicated in my deposition that I thought the range  
24 was somewhere in the 25 to 75 million, but I don't recall the  
25 exact amount.

Schroeder - Direct

1 Q. I think that is what you indicated in your deposition.

2 Where did you get that impression?

3 A. Just from my recollection of some of the discussions that  
4 were held back then.

5 Q. And with whom did you hold those discussions?

6 A. People within Magnum and people within Patriot who were  
7 involved in the acquisition.

8 Q. Who with Magnum, for instance?

9 A. Who at Magnum?

10 Q. Yes.

11 A. Paul Vining, Richard Verheig, Keith St. Clair, Lawrence  
12 Bell. There were probably others.

13 Q. What is Mr. Vining's position with Patriot now?

14 A. With Patriot, he is president and chief operating  
15 officer.

16 Q. So Magnum came to Patriot with somewhere between 25 and  
17 \$75 million of liability. At least that's your recollection  
18 of what you believe at the time that Magnum has absorbed --  
19 was absorbed by Patriot.

20 A. No, what I indicated was that I remember having  
21 discussions about the liability. I don't recall the exact  
22 amount. My recollection was it was somewhere in -- our  
23 estimate was somewhere in the 25- to 75-million range.

24 Q. Was there any document that reflects that that you're  
25 aware of?

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1 A. No.

2 Q. And Patriot agreed to take on those liabilities based on  
3 conversations without a formal document laying out the  
4 selenium liabilities.

5 A. I'm not saying there is no formal document or was no  
6 formal document. I don't recall having a document that had  
7 that number at that range.

8 Q. Plaintiffs would've asked -- asked for that document.  
9 Plaintiff's discovery request would have turned up that  
10 document if it existed, wouldn't it have?

11 A. I don't know.

12 Q. After you acquired Magnum did you eventually hire an  
13 expert to help you understand the selenium liabilities?

14 A. We did hire an expert. I did not personally hire them.  
15 We did hire an expert. I don't recall the exact timing of  
16 hiring them.

17 Q. And was that Potesta and Associates?

18 A. Yes, sir.

19 MR. LOVETT: May I approach, Your Honor?

20 THE COURT: You may.

21 MR. LOVETT: Plaintiff's 17.

22 MR. TEANEY: 16.

23 MR. LOVETT: 16. I'm sorry.

24 CLERK JUSTICE: Joe, what is that number?

25 MR. LOVETT: 16.

Schroeder - Direct

1 THE COURT: It's already in.

2 MR. LOVETT: It's in. It's in.

3 BY MR. LOVETT:

4 Q. Mr. Schroeder, have you seen this document before?

5 A. Yes. I believe this is the document that you showed me  
6 at my deposition several weeks ago.

7 Q. Right. And is it your understanding that this is a  
8 letter from Potesta to James Crawford, who at the time was  
9 with Patriot Coal?

10 A. The letter is addressed to Mr. Crawford, and it's not  
11 signed, but Potesta is on the signature block.

12 Q. It's a draft I guess is the reason it's probably not  
13 signed. Is that a reasonable assumption?

14 A. There is the word "Draft" on the top of the first page.

15 Q. You don't recall seeing this before your deposition?

16 A. No, I don't.

17 Q. And I turn your attention now to page 2, the average flow  
18 per outlet, Average Flow Rate Per Outlet section. Do you see  
19 that?

20 A. Yes, I do.

21 Q. And do you see that at that time, Magnum -- excuse me --  
22 Potesta is estimating that Magnum's operations have base flow  
23 of 14,040 gallons per minute that would need to be treated to  
24 comply with its selenium limits?

25 A. I see the last sentence indicating -- showing the number

Schroeder - Direct

1 of 14,040 gallons per minute.

2 Q. And I think the sentence before that says that that's  
3 based on what Potesta believes to be the average rate, which  
4 is 195 gallons per minute at each outfall that Patriot had  
5 liability associated with; is that right?

6 A. The sentence reads, "Potesta believes that 195 gpm  
7 represents a reasonable yearly average flow rate for Magnum  
8 operations outlets."

9 Q. Okay. Now, why were you having this Potesta report  
10 completed?

11 A. Potesta was hired to help assess the legacy and the  
12 selenium liability amount as part of the purchase accounting  
13 entries that Patriot would have recorded for the acquisition  
14 of Magnum.

15 Q. Why is that important, that accounting? Why is that  
16 accounting important in a financial system?

17 A. In an acquisition, to record the acquired assets. So  
18 it's one of the steps in recording the acquired assets and  
19 assumed liabilities.

20 Q. Because the corporation and its shareholders need to know  
21 what that is, right, what the liability is?

22 A. It's part of acquiring the assets and the liabilities.  
23 You'd want to state a value for the assets and the liabilities  
24 assumed.

25 Q. And ultimately those liabilities are going to end up in

Schroeder - Direct

1 your quarterly and annual reports, right?

2 A. The liability would be recorded as part of the balance  
3 sheet.

4 Q. Now, in this draft -- and I understand it's a draft -- on  
5 page 4, Potesta concludes, I think, that the total selenium  
6 treatment liability cost is estimated at \$219,304,800  
7 expressed as a present worth cost. Do you see that?

8 A. I do see that.

9 Q. But you don't recall seeing this before you put out the  
10 10-Q that would've come directly after this draft.

11 A. No, I don't, but I will say that we had not concluded the  
12 purchase accounting at the time of the next Q. It was not  
13 completed until the second quarter of 2009.

14 MR. LOVETT: Okay. May I approach?

15 THE COURT: You may.

16 MR. LOVETT: This is a new exhibit that we received  
17 on Monday evening -- or Sunday evening. I don't remember what  
18 number we're on for plaintiffs.

19 THE COURT: I think 64.

20 MR. LOVETT: 64?

21 THE COURT: Yes.

22 MR. LOVETT: Mark that as Plaintiff's 64, please.

23 BY MR. LOVETT:

24 Q. Mr. Schroeder, have you seen this email before or these  
25 emails?

Schroeder - Direct

1 A. I see that the second page has a note that says, "What is  
2 the status of the Magnum environmental liability? Is there a  
3 revised estimate?" And my name is attached. I don't recall  
4 this -- seeing this piece of paper, but my name is attached to  
5 it.

6 Q. Okay. So you started this email chain it looks like  
7 June 8, 2009, and you asked Chris what the status of Magnum's  
8 environmental liabilities are?

9 A. This is dated June 8, 2009 from me to Chris Knibb.

10 Q. Chris Knibb?

11 A. Yes.

12 Q. And Chris Knibb is?

13 A. His title I believe is vice-president and controller of  
14 Magnum Coal.

15 Q. And is Mr. Knibb involved in the selenium liability issue  
16 at Patriot?

17 A. He would have been involved in our assessing what the  
18 selenium liability amount is at the purchase accounting date.

19 Q. And when you say environmental liability here, I mean are  
20 you really talking about the selenium liability?

21 A. Probably all environmental liabilities but certainly to  
22 include the selenium liability.

23 Q. Was that the most of the liabilities that you were  
24 concerned about?

25 A. I don't recall, but I'm sure selenium was certainly a



Schroeder - Direct

1 part of it, probably a major part of the total amount.

2 Q. Okay. Now, in response to that, I think that -- I guess  
3 Chris Knibb responds to you that, "We have a rough cut of a  
4 new number that's about half of the old one. We have not yet  
5 sold EY on it." What is -- who is "EY"?

6 A. Ernst & Young. "E&Y" is referring to Ernst & Young.  
7 They are independent auditors.

8 Q. So you have a rough cut of a new number that's about half  
9 the old one, and you haven't sold Ernst & Young on it. Still  
10 working on the, quote, story.

11 Is that what it says?

12 A. That's the word. Those are the words, yes.

13 Q. So you're trying to convince Ernst & Young, at least  
14 Mr. Knibb is, in response to your email that Patriot's  
15 liability is lower than it was earlier estimated to be.

16 A. This would indicate that the liability is half of the  
17 previous one and still need to talk with Ernst & Young on it.

18 Q. Haven't sold Ernst & Young on that number yet, right?

19 A. It says have not sold EY on it yet.

20 Q. Okay. Now, that was on June 9; is that right?

21 A. Yes, sir.

22 MR. LOVETT: Okay. May I approach, Your Honor?

23 THE COURT: You may.

24 BY MR. LOVETT:

25 Q. This is Exhibit -- Plaintiff's 60, six zero. This has --

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1 I'm marking on the front. That's really just a marking of the  
2 exhibit number. There's no other markings on the document. I  
3 just want to point that out before I give it to you.

4 Have you seen that document?

5 A. Yes, I have.

6 Q. And have you seen that -- you saw that before your  
7 deposition; is that right?

8 A. Yes.

9 Q. Is this the final Potesta report that you based the  
10 estimate of Patriot's liability for selenium in the 6/30, 2009  
11 10-Q?

12 A. Yes, it is.

13 Q. So let's turn to page 2 of this document, please, and  
14 there I think that -- well, before we get there, let's turn to  
15 the back page of the attachment, Table 3.

16 Do you see the methodology there for Potesta's estimate  
17 of Patriot's operating cost?

18 A. There's a table here, Table 3, that shows operating  
19 costs, Magnum operations.

20 Q. And you understood those tables at the time you prepared  
21 the 10-Q, right?

22 A. I would have seen this document at the time that we were  
23 preparing the 10-Q, so I was probably --

24 Q. This document shows that the final Potesta report is  
25 based on installing two trains of six tanks each at each of

Schroeder - Direct

1 Patriot's 72 outfalls that had selenium problems; is that  
2 right?

3 A. I can't read it real well, but it looks like it says  
4 recharges tank per year, 2. Is that what you're referring  
5 to?

6 Q. Yes. So the new number for estimating the selenium  
7 liability, the change between the draft report and this final  
8 report is the change between 14,040 gallons per minute base  
9 flow and 24 gallons per minute at 72 outfalls; is that right?

10 A. I don't know.

11 Q. You signed the 10-Q based on this liability after reading  
12 this report. Let me ask you again, isn't this based on  
13 treating 24 gallons per minute at 72 outfalls?

14 A. I don't know. I signed the report based on the liability  
15 amount that was shown -- that is shown on page 2.

16 Q. Okay. Let's look a little more closely at it, then.  
17 Before we get to that, though, is this the document to which  
18 the email refers when it says that we're trying to convince --  
19 we're trying to sell Ernst & Young on a new number that's  
20 about half of the old number?

21 A. I don't know.

22 Q. Well, I mean this Potesta report comes out shortly after  
23 the series of emails, doesn't it?

24 A. The email from me was --

25 Q. About six weeks?

Schroeder - Direct

1 A. -- on June the 8th, and this is dated July the 29th, so  
2 within six or seven weeks that you're saying.

3 Q. And you commissioned the Potesta report to convince  
4 Ernst & Young, didn't you, that your liability was a certain  
5 number?

6 A. We requested --

7 MR. GARDNER: Your Honor, I'm going to object to  
8 that. If Mr. Lovett wants to ask why the report was done or  
9 lead him in any way, that's fine, but this wasn't done to  
10 establish any reason to suggest it was done to convince  
11 anything. I mean Mr. Schroeder testified --

12 THE COURT: Well, he testified earlier that they --  
13 correct me if I'm wrong, Mr. Schroeder. I understand you to  
14 say that you contracted with Potesta in order to have Potesta  
15 calculate the legacy cost for environmental treatment that you  
16 believe you were going to be acquiring when Patriot took over  
17 Magnum.

18 THE WITNESS: We -- I'll say it in my words --

19 THE COURT: Okay.

20 THE WITNESS: -- if you don't mind.

21 THE COURT: Sure.

22 THE WITNESS: We contracted with Potesta to help us  
23 establish what the liability was for the selenium obligation  
24 that we acquired with the Magnum acquisition.

25 THE COURT: All right. And did you expect that you

Schroeder - Direct

1 would use the Potesta report when you prepared the financial  
2 statements and similar reports necessary for the acquisition  
3 transaction to actually occur?

4 THE WITNESS: Yes, I expected to use --

5 MR. LOVETT: All right. Sure.

6 THE WITNESS: -- the Potesta report for the final  
7 number.

8 BY MR. LOVETT:

9 Q. And that's why I think Mr. Knibb said that they're trying  
10 to sell EY in his email to you.

11 A. Well, I was indicating that the email is dated early  
12 June. This is a final report. I don't know how the -- I  
13 don't recall how the two were tied together.

14 Q. If you were going to sell something to EY, though, you  
15 would sell it through the Potesta report, right?

16 A. Ernst & Young would have received a copy of the Potesta  
17 report as part of their diligence in looking at our recording  
18 of the acquisition.

19 MR. LOVETT: Okay. Your Honor, one of our witnesses  
20 has an exhibit that I need. He's sitting in the back of the  
21 courtroom. Do you mind if I go back there --

22 THE COURT: Go ahead.

23 MR. LOVETT: -- and get it? I'm sorry. Plaintiff's  
24 17. And I apologize if this has been marked on, but I don't  
25 think there's any problematic markings there. Well, I don't

Schroeder - Direct

1 have the exhibit before me.

2 May I approach, Your Honor?

3 THE COURT: You may.

4 BY MR. LOVETT:

5 Q. I turn your attention to -- I think it's the second page.  
6 First of all, is this a series of emails relating to the EY  
7 audit of the selenium liabilities?

8 A. I have not looked at it.

9 Q. If you want to take some time to look at it.

10 A. These are emails from, at least at one point, from Ernst  
11 & Young to a couple of individuals at Patriot Coal.

12 Q. On page -- I'm just going to use one paragraph of it.  
13 You're welcome to take your time, but I think we talked about  
14 it at your deposition as well.

15 On the third page there's a passage about halfway down  
16 that says, "Can you provide your basis of professional  
17 judgment?" Do you see that?

18 A. Yes, I do.

19 Q. So this is a question from the auditor to Patriot  
20 answered by John McHale?

21 A. I can't tell for sure who was asking the question. I see  
22 a Chip and a Jeremiah. Those are both individuals at Ernst &  
23 Young. I can't tell if they are actually asking the question  
24 or not.

25 Q. But Jeremiah is an Ernst & Young auditor, right?

Schroeder - Direct

1 A. Yes.

2 Q. And it appears that he's asking this question, doesn't  
3 it?

4 A. I'm not sure. I can't tell from the type here.

5 Q. In any event, somebody is asking John McHale the  
6 question, "Can you provide your basis of professional judgment  
7 for assuming that the portfolio outlets requiring ongoing  
8 treatment will most likely require, on average, six tanks?"

9 Do you see that question?

10 A. Yes, I do.

11 Q. Now, the date of that email is July 22nd; is that right?

12 A. Yes.

13 Q. Is that date significant for some reason? What happened  
14 on July 23rd?

15 A. July 22nd, 2009 was within one day of the acquisition.  
16 The acquisition occurred on July 23rd, 2008.

17 Q. Okay. Also, that means that it's one year -- within one  
18 day of the time that your final accounting is due; is that  
19 right?

20 A. Well, the final accounting isn't actually due on  
21 July 23rd --

22 Q. Okay.

23 A. -- one year later. It's when you file your, in this  
24 case, our form 10-Q.

25 Q. So it wouldn't have been necessary to answer this

Schroeder - Direct

1 question by the next day?

2 A. No.

3 Q. Okay. So it says -- so Mr. McHale then goes on to  
4 explain that -- why don't you read his explanation for how the  
5 Potesta report --

6 A. I don't know if this is John's or not, but the next words  
7 are, "The systems are modular in design, consisting of  
8 individual treatment trains that will reduce the selenium  
9 concentration -- concentrations for a fixed flow to compliant  
10 levels." Continue?

11 Q. Okay. Right. And then he goes on to say, "I think that  
12 the average selenium concentrations of the untreated water are  
13 20 to 30 parts per billion. In order to bring this  
14 concentration to a compliant level, a three-tank treatment  
15 train is required and will treat flow of approximately  
16 12 gallons per minute." Is that right?

17 A. Yes, the very last part is a three-tank treatment train  
18 is required and will treat a flow of approximately 12 gpm.

19 Q. And that's what you see also at the bottom -- on Table 3  
20 of Exhibit 60, correct? Three-tank trains, 24 gallons per  
21 minute.

22 A. I see tanks per treatment train of three. I don't see  
23 the 24 here anywhere.

24 Q. Effective gallons per minute per tank, do you see that at  
25 four?



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1 A. Yes.

2 Q. Tank per treatment, there are three?

3 A. Yes.

4 Q. Okay. So you have 12 trains -- or 12 tanks. Excuse me.

5 You have a flow rate of 12 gallons per minute times two trains  
6 is 24 gallons per minute; is that right?

7 A. I have to admit I don't know.

8 Q. Okay. What is your understanding of how Potesta arrived  
9 at its estimate of Patriot's selenium liability?

10 A. I don't know exactly what they did. I believe they spent  
11 some time at the site, spent some time talking with the  
12 engineers within our company, had some dialogue back and  
13 forth, did some of their own work and came to a conclusion.

14 Q. Do you know how?

15 A. No, I don't.

16 Q. Well, do you see these data sheets attached to the  
17 Potesta report?

18 A. Yes, I do.

19 Q. And are each of them an outfall? Do they each represent  
20 outfalls that need to be treated?

21 A. It's a little hard to read, but I do see the outfall in  
22 here, outfall listed here in four separate lines.

23 Q. Right. And do they estimate the cost for -- the  
24 operating cost and the installed cost for each of them?

25 A. Yes.

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1 Q. And then in the next summary, Table 2, it says average --  
2 below that it says average cost for six-tank base system  
3 without power and site prep is \$108,000.

4 A. Yes.

5 Q. And so for -- I think the first column is for favorable  
6 conditions. It would cost 235,604 to install each six-tank  
7 system or train.

8 A. I see \$235,604 as the total average base system cost  
9 under the favorable.

10 Q. It says average cost for six-tank base system without  
11 power and site prep, right? That's the first line.

12 A. Yes.

13 Q. Okay. So that total includes a six-tank system, right?

14 A. I can see that it's a total average base system cost.

15 Q. Can you see that it's totaled, that those three numbers  
16 total to the last one? Do we have to get out a calculator?  
17 Isn't that --

18 A. No, hold on just a second.

19 Q. Okay.

20 A. It looks like they do add up to the total.

21 Q. So isn't it necessarily then for a six-tank base system?

22 A. It looks like it would include these three separate  
23 captions to get to the fourth one.

24 Q. Can you see that Ernst & Young is concerned about the  
25 six-tank system in the email that it asked John McHale to

Schroeder - Direct

1 respond to?

2 A. I don't know.

3 Q. You -- okay. I'm sorry.

4 A. I'm not sure if Ernst & Young saw this at the time that  
5 they wrote their email.

6 Q. In any event, what Potesta has done here is taken a six-  
7 tank system and calculated cost for adverse conditions and for  
8 favorable conditions, right?

9 A. I see a favorable and an adverse, yes, two different  
10 dollar amounts.

11 Q. Two different dollar amounts, right?

12 A. Yes, uh-huh.

13 Q. And then you go to the back -- to the next page, Table 3.  
14 If you take those dollar amounts and they say, okay, we've  
15 got, just as they say here, a six-tank base system -- it just  
16 says tanks per treatment train is three. You have two trains  
17 at each based on Table 2.

18 Isn't this document calculating the costs of your  
19 liability based on a 24-gallon-per-minute system?

20 A. I'm sorry. I really don't know. I mean I can tell you  
21 what these numbers show on here, but I really don't know how  
22 the trains go into the tanks.

23 Q. What was your understanding of what Patriot was going to  
24 be treating at its sites?

25 A. I don't recall.

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1 Q. Would it have been a problem for Patriot if it was  
2 estimating its total liability based upon only treating  
3 24 gallons per minute at each of its outfalls?

4 A. I really don't know what the requirement was to treat at  
5 each outflow.

6 Q. Well, we know that the draft document says -- the  
7 January 20th draft document that I showed you says that the  
8 base flow at Magnum operations is 14,040 gallons per minute,  
9 don't you? Page 2 of the January 20th draft.

10 A. Yes, this had the sentence with 72 outlets required,  
11 total water flow requiring treatment for Magnum operations is  
12 14,040 gpm.

13 Q. And next we have the email that I showed you where you're  
14 trying -- where Chris Knibb is trying to sell Ernst & Young on  
15 a new story at half the cost, right?

16 A. I see the email from Chris Knibb, yes.

17 Q. Next comes this final Potesta report, right?

18 A. You showed me a third one also, but we'll skip to the  
19 fourth.

20 Q. Okay. In between was an email to John McHale, an email  
21 in which John McHale responded about how the flows were  
22 calculated at each of the outfalls, right?

23 A. I don't know exactly if this is from John McHale, but it  
24 looks like it is a question from Ernst & Young, and I see John  
25 McHale's name on here.

Schroeder - Direct

1 THE COURT: Which exhibit are you referring to?

2 MR. LOVETT: The last one, 17.

3 THE WITNESS: 17.

4 THE COURT: All right.

5 BY MR. LOVETT:

6 Q. Then we come up with the final report, and the final  
7 report no longer has the number 14,040 gallons per minute in  
8 it, does it?

9 A. I haven't looked through the whole report.

10 Q. It's just a page and a half.

11 A. Okay.

12 Q. I don't think you'll find any number there.

13 THE COURT: Is that Exhibit 60?

14 MR. LOVETT: 60, yes, Your Honor.

15 THE WITNESS: I don't see the flow listed here.

16 BY MR. LOVETT:

17 Q. Instead, what we have is the table at the back, right?

18 A. There is a table attached.

19 Q. And it estimates costs for treatment at each outfall,  
20 doesn't it?

21 A. There is an operating cost estimate on here, yes.

22 Q. And when you look at how those were calculated, it  
23 estimates them based on Table 2 for six tank systems treating  
24 24 gallons per minute; is that right?

25 A. I'm sorry, but I don't see how the calculation works.

Schroeder - Direct

1 Q. Okay.

2 A. I hate to be difficult, but --

3 Q. Now, if this report is treating -- is reporting the  
4 liability about treating only 24 gallons at 72 outfalls, would  
5 that be a problem?

6 A. I don't know. I don't know what the flow -- I don't know  
7 the specifics of what we were treating.

8 Q. Well, you saw the December report that said that there  
9 were 195 gallons per minute base flow based on Potesta's  
10 study, right?

11 A. I go back through -- is this the first exhibit that you  
12 showed me?

13 Q. Yeah.

14 A. It shows a total flow rate of 14,040 gpm.

15 Q. Based on 195 gallons per minute at each outfall. That's  
16 two sentences above that.

17 A. Sorry. I don't see that.

18 Q. Okay. "This rate -- the average flow rate from the 191  
19 Magnum NPDES outlets was determined by averaging the minimum  
20 flows reported on the 2007 DMRs for Magnum operations. This  
21 rate was 195 gallons per minute per outlet."

22 Do you see that?

23 A. No, I don't. Which page are you on?

24 Q. It's the first sentence in the same paragraph that the  
25 14,040-gallons per minute is determined.

Schroeder - Direct

1 A. The first sentence in the paragraph that I see the 14,040  
2 says, "The estimated capital cost for gpm" --

3 Q. I'm taking you to the wrong place. I'm sorry. Let's  
4 turn to the January 20th draft, page 2.

5 A. Page 2.

6 Q. Average flow per outlet.

7 A. Okay. I do see that.

8 Q. Okay. And then it says, "Potesta believes that  
9 195 gallons per minute represents a reasonable yearly average  
10 flow rate for Magnum operations outlets."

11 That's what Potesta said in January of 2009, right?

12 A. That sentence is in there, the January 2009 draft.

13 Q. Then that's the draft report. In the final report of  
14 July 2009, there's no longer any -- there's no number in here  
15 for how much total flow is treated, is there?

16 A. I did not see any reference to flow in the final report.

17 Q. Except for the tables which calculate treating 24 gallons  
18 per minute at each outfall.

19 A. And as I mentioned, I don't know how to get to flow from  
20 the Table 2 and Table 3.

21 Q. Do you understand this report? When I say "this report,"  
22 I mean the July 29, 2009 report.

23 A. I understand the liability recorded, the liability  
24 referenced in the last paragraph.

25 Q. All you understand is one sentence of it? You don't

Schroeder - Direct

1 understand any other part of it?

2 A. I don't have a thorough understanding of all the pages,  
3 if that's what you're asking.

4 Q. No, that's not what I'm asking you.

5 A. Okay.

6 Q. I'm asking you if you have any understanding of it.

7 A. Yes, sir, I do.

8 Q. Okay. How do you think that Potesta determined Patriot's  
9 liability for selenium?

10 A. I can't explain to you the detailed calculation.

11 Q. Can you tell me any part of it?

12 A. It appears that they went through the individual outfalls  
13 and estimated a dollar amount for capital and a dollar amount  
14 for operating cost.

15 Q. And when you signed the 10-Q that this was based on, did  
16 you believe that it was estimating the entire flow from your  
17 outfalls?

18 A. I believed that they had estimated the liability to be  
19 eighty-five million, one hundred fifty-five dollars, three  
20 hundred and seventy-four.

21 Q. But you have no idea how it got to that? None? Is that  
22 right?

23 A. I didn't say none.

24 Q. Okay. Well, explain to me what your understanding is of  
25 how Potesta evolved from the January 20th to the July 29th



Schroeder - Direct

1 report and how it determined your liability in July 29th.

2 A. I can't tell you how they got from January 20, 2009 to  
3 July 29, 2009.

4 Q. Okay.

5 A. I certainly would have relied on the engineers who were  
6 part of my group who have a much better understanding of what  
7 Potesta's assessment -- what their calculations were  
8 determining, and I would have relied on the final report, the  
9 July 29, 2009 report.

10 Q. It says the cost -- this is on Exhibit 60 -- no, the July  
11 29th report, the liability cost estimate. The cost to  
12 remediate selenium was estimated at \$390,719,470 gross,  
13 adjusted for inflation, or 85,155,374 expressed as a present  
14 net worth; is that right?

15 A. Yes, it does say that.

16 Q. That's a big number, isn't it?

17 A. Both of those numbers are big numbers.

18 Q. It's an important part of your 10-Q, right?

19 A. Yes.

20 Q. Did you know at the time whether this was estimating the  
21 flow for all of the outfalls, estimating the treatment cost  
22 for all of the flow?

23 A. I don't recall back then, but I would say I probably  
24 realized this reflected what they estimated for the liability.  
25 I assumed that to be the liability that I needed to record.

Schroeder - Direct

1 Q. Did we have this discussion during your deposition about  
2 how much of the flow the Potesta outfalls -- the Potesta  
3 report was recording?

4 A. We did have a discussion about this, and as I recall --  
5 pardon me. But as I recall, you had trouble explaining the  
6 last page to me, and I have to admit I'm still having trouble  
7 following it.

8 Q. Did you tell me at the end of that that you might call  
9 Mr. McHale to ask him about it before you put out --

10 A. No.

11 Q. -- your most recent 10-Q?

12 A. I recall saying something like I would consider a  
13 conversation with Mr. McHale.

14 Q. Well, your deposition occurred before your most recent  
15 10-Q, didn't it?

16 A. Yes, it did.

17 Q. And were you not troubled by this report's apparent --  
18 I'll characterize it as apparent estimation of flows based on  
19 25 gallons per minute per outfall?

20 A. I was not troubled, no.

21 Q. I said to you in your deposition at page 184, "In other  
22 words, are you going to go back and look to see if, in fact,  
23 the Potesta estimate of selenium liability is only for about  
24 10 percent of the flow?" And you said, "I'll certainly  
25 consider it, yes." And then I said, "Will you consider

Schroeder - Direct

1 calling John McHale and asking him what is this thing about an  
2 FBR fluidized bed reactor report that you've just gotten?"  
3 You said, "I'll consider it."

4 Did you call Mr. McHale or talk to Mr. McHale about that?

5 A. I did have a couple of conversations with Mr. McHale  
6 since the deposition.

7 Q. Did you ask him ever if the Potesta report that you're  
8 basing still your estimates in your 10-Q on is using only  
9 10 percent of the flow to calculate your liability?

10 A. I didn't ask him that specific question, no.

11 Q. So you put out your most recent 10-Q this past Friday; is  
12 that right?

13 A. We filed on Friday, yes.

14 Q. And you did not change your selenium liability in that  
15 10-Q from your previous estimates, did you?

16 A. Yes, I think the number changed by roughly \$5 million.

17 Q. And why was that? How did it -- what was the reason that  
18 you changed it by \$5 million?

19 A. I took the accounting, the accretion of the accounting in  
20 excess of the actual cash payment.

21 Q. And there's an accretion at every new reporting period,  
22 right?

23 A. Yes, sir.

24 Q. So it's still based on this estimate from Potesta, plus  
25 the accounting accretion that you add at the time of a new

Schroeder - Direct

1 report.

2 A. Less the actual cash, yes.

3 Q. So it is based still on this Potesta report, your 10-Q.

4 A. It's initiating from the Potesta report, yes.

5 Q. Well, it's still based completely on it, that Potesta  
6 report's estimation of the cost of your liability, right?

7 A. Yeah, I guess that was -- the Potesta report has a  
8 different number than what is in the 10-Q, but it certainly is  
9 the starting or initiating point.

10 Q. Looking at the July 29th final Potesta report,  
11 Exhibit -- Plaintiff's Exhibit 60, what in that report would  
12 allow you to understand what the flow is that was going to be  
13 treated?

14 A. Would allow me?

15 Q. Yeah.

16 A. The flow is not listed on page 1 or page 2. I would have  
17 relied on the dollar amount that is in here and conversations  
18 with those who were more familiar with what this report is --  
19 the mechanics of it and how it works.

20 Q. What conversations did you have?

21 A. I don't recall.

22 Q. Ernst & Young was obviously concerned about it because it  
23 sent a letter and asked -- or a message and asked John McHale  
24 to explain it, right?

25 A. I do see a note from Ernst & Young.

Schroeder - Direct

1 Q. But you weren't concerned about it.

2 A. I didn't say I wasn't concerned about it. I mean I saw a  
3 note from Ernst & Young in early June. I see the final report  
4 here from Potesta.

5 Q. You have no idea how Potesta came up with the  
6 \$390 million figure, right?

7 A. I didn't say I had no idea.

8 Q. Okay.

9 A. I did not understand the mechanics of how they go through  
10 the calculation.

11 Q. One more time. What idea do you have? Tell me your  
12 understanding at any level of how that number got on that  
13 page.

14 A. I see the individual pages behind the first two listing  
15 the individual outfalls with a dollar amount for operating  
16 costs and a dollar amount for the capital.

17 Q. And do you know what those mean?

18 A. It appears to be estimates for the individual outfalls,  
19 and then from those amounts I believe what probably occurred  
20 is these are --

21 Q. Okay.

22 A. -- these are summing the individual years, and then I  
23 believe what they did is calculate the present value of these  
24 cash streams to come up with a number that is shown on  
25 page 2.

Schroeder - Direct

1 Q. We'll come back to this later. Let's move on to Joint  
2 Exhibit 13.

3 First, let me turn your attention to Plaintiff's  
4 Exhibit 21. It's an email from John McHale -- excuse me --  
5 yeah, from John McHale to Blair Gardner. This is an email  
6 from August of 2009, and it went to -- I know you didn't -- it  
7 didn't go to you. It went to your lawyers. But the first  
8 paragraph of this email discusses ABMet.

9 A. Are you on the response or the email itself?

10 Q. I'm sorry?

11 A. Are you on the response or the email itself?

12 Q. I'm on the email -- well, the one on the first page. I  
13 guess I am on the response, the one that McHale sent to Blair  
14 Gardner where he says, "Blair, attached is a budgetary quote  
15 we received from GE for the equipment cost for the ABMet  
16 system." It goes on to say in the last line that the total  
17 installed cost is \$8,742,000. Do you see that?

18 A. I do.

19 Q. It says, "This is clearly not economically feasible." Do  
20 you see that?

21 A. I see that, yes.

22 Q. Do you agree that that's not economically feasible?

23 A. You're asking me to look at one number in a sentence.

24 Q. Okay.

25 A. I don't know.

Schroeder - Direct

1 Q. Well, did anyone ever come to you and say there's this  
2 technology called ABMet and it's going to cost a certain  
3 amount of money?

4 A. We've had some conversations about ABMet recently, and I  
5 don't think I've seen any estimate of the cost.

6 Q. Have you or anyone else at Patriot told Mr. McHale what  
7 is economically feasible for your company?

8 A. I have not.

9 Q. Do you have an opinion about that?

10 A. I don't, no. I mean I don't have a number that I would  
11 throw out and say this is economically feasible or not.

12 Q. So you didn't tell Mr. McHale that ABMet is not  
13 economically feasible?

14 A. No.

15 Q. And you didn't tell him that any treatment technology is  
16 not economically feasible, right?

17 A. I don't recall having that conversation with Mr. McHale.

18 MR. LOVETT: May I approach?

19 THE COURT: You may.

20 MR. LOVETT: This is Plaintiff's 13.

21 CLERK JUSTICE: Is it Joint?

22 MR. LOVETT: Joint 13. I apologize.

23 BY MR. LOVETT:

24 Q. Have you seen this report before?

25 THE COURT: Before you get off that, I'm confused

Schroeder - Direct

1 about the email. The last email, was that Plaintiff's  
2 Exhibit 22?

3 CLERK JUSTICE: I didn't know if it was 64 because I  
4 didn't have a copy of it.

5 MR. LOVETT: Let me find it. I don't know what I  
6 did with it.

7 THE COURT: 21. Okay.

8 CLERK JUSTICE: Is that already in?

9 BY MR. LOVETT:

10 Q. So this is Joint 13 now, which is the Duff & Phelps  
11 report. Have you seen this?

12 A. Yes, I have.

13 Q. And why was the Duff & Phelps report commissioned?

14 A. We commissioned Duff & Phelps to value certain assets  
15 acquired and liabilities assumed from Magnum as part of the  
16 acquisition.

17 Q. And why did you need to have Duff & Phelps do that?

18 A. It's typical in an acquisition to involve a third party  
19 to help assess the assets and the liabilities.

20 Q. And on page 38 -- do you see page 38 there?

21 A. Yes, I do.

22 Q. Says Goodwill. And the last two paragraphs, it says, "In  
23 the subject case, the value indications arrived at by Duff &  
24 Phelps for the subject assets significantly exceeded" --

25 THE COURT: Slow down.



Schroeder - Direct

1 BY MR. LOVETT:

2 Q. Excuse me. " -- significantly exceeded the  
3 consideration. While such instances of a bargain purchase are  
4 admittedly rare, based on the data and the cash flow models  
5 received" -- and it goes on to say, "Our review indicates that  
6 it is a -- that a bargain purchase did occur in the case of  
7 the subject acquisition." Is that right?

8 A. Yes, I see that.

9 Q. Duff & Phelps thought you got a great deal when you  
10 bought -- when you acquired Magnum.

11 A. Part of their description of goodwill would say that this  
12 was a, quote/unquote, bargain purchase.

13 Q. And it says such instances are admittedly rare. Is that  
14 what it says?

15 A. Yes.

16 Q. Then it goes on to say, I think, "The valuation of the  
17 Magnum acquisition resulted in negative goodwill of  
18 approximately \$360.3 million," right?

19 A. Yes.

20 Q. Does that mean that you bought it for \$360 million or you  
21 acquired it for \$360 million less than it was worth?

22 A. Based on the valuation done on that day, yes.

23 Q. Now, the Duff & Phelps report didn't include any selenium  
24 liability, right?

25 A. The calculation of 360.3 million would include an

Schroeder - Direct

1 assessment of selenium liabilities.

2 Q. Oh, it would?

3 A. Yes.

4 Q. I misunderstood. I thought in your deposition you said  
5 that they were two separate reports, that the Duff & Phelps  
6 was independent of the Potesta report and that the Potesta  
7 report was commissioned to determine your selenium liabilities  
8 and the Duff & Phelps report did not consider that. Am I  
9 wrong in that understanding?

10 A. Two separate studies, Potesta done on the selenium  
11 liabilities, Duff & Phelps done on assets and selective  
12 liabilities. The Duff & Phelps report would have included the  
13 Potesta liability, just like the Duff & Phelps report would  
14 have included the work done by another firm, Mercer, in  
15 estimating retiree health care liabilities.

16 Q. That's not what you said in your deposition, though, is  
17 it? I mean I'm not trying to cause a problem here. I'm just  
18 trying to understand. I think your deposition was pretty  
19 clear that the Duff & Phelps number did not include the  
20 selenium liability figure.

21 A. I don't know exactly what I said, but what I was  
22 attempting to say -- maybe I didn't do it all that well -- was  
23 that Duff & Phelps was not contracted to determine the  
24 environmental liability, the selenium liability.

25 Q. Okay. So you think that within the Duff & Phelps

Schroeder - Direct

1 estimate of the value of -- or the bargain was the Potesta  
2 liability number?

3 A. Yes, I believe so.

4 Q. Now, this Duff & Phelps report is from July 23rd of 2009,  
5 right?

6 A. Yes, it's dated July 23rd.

7 Q. And the final report from Potesta was July 29th, right?

8 A. Yes, it's dated July 29th.

9 Q. So could the Potesta, the number, have been in the Duff &  
10 Phelps?

11 A. Yes.

12 Q. How, since the Duff & Phelps predates the Potesta report?

13 A. I would imagine there was probably some discussions  
14 between the parties.

15 Q. Can you tell me do you know -- are you pretty familiar  
16 with this Duff & Phelps report?

17 A. I'm familiar with it.

18 Q. Can you show me where in here the selenium liability is  
19 recorded?

20 A. It's probably included -- probably included on page  
21 Romanette ii in the other non-current liabilities.

22 Q. Which page?

23 A. Romanette ii.

24 Q. Okay.

25 A. In the other non-current liabilities number.

Schroeder - Direct

1 Q. Other non-current liabilities?

2 A. Yes.

3 Q. And that's \$141,250,000?

4 A. Yes.

5 Q. And is that -- where is that number in the Potesta  
6 report?

7 A. The Potesta report is probably part of that 141 million.  
8 It's not the full line item.

9 Q. I see. So you got a bargain even considering what the  
10 Potesta report shows, right? You got a \$360 million bargain  
11 even considering that.

12 A. Yes. Negative goodwill was 361 million or 363 million.  
13 That's at page 38.

14 Q. And the 10-Q, the 10-Q from -- just to nail this down, a  
15 new exhibit. We're on 65. 65. Selected pages from 10-Q from  
16 8/7, 2009. Do you see that?

17 A. Yes.

18 Q. And the liability that you report on for selenium is at  
19 the back page, and I think you say -- this is one, two, three,  
20 four paragraphs down. We use a 13 percent discount rate -- do  
21 you see that?

22 A. Yes, I do.

23 Q. -- in determining a net present value for selenium  
24 liability?

25 A. Yes.

Schroeder - Direct

1 Q. How did you come up with 13 percent discount rate?

2 A. I think that is a weighted average capital rate as  
3 determined by Duff & Phelps.

4 THE COURT: Can you speak up a little bit?

5 THE WITNESS: Sorry. I believe that's the rate  
6 determined by Duff & Phelps, weighted average cost of capital.

7 BY MR. LOVETT:

8 Q. So you relied on Duff & Phelps for the 13 percent?

9 A. I'm sorry?

10 Q. You relied on Duff & Phelps for the 13 percent weighted  
11 average cost of capital?

12 A. We would've asked Duff & Phelps as part of their  
13 valuation to determine what rates to use, so yes.

14 Q. Okay. And it says the estimated aggregate undiscounted  
15 amount is \$390.7 million. Do you see that?

16 A. Yes, I do.

17 Q. And that is the same estimate from the Potesta report of  
18 December; is that right?

19 A. Yes, it is.

20 Q. And that's the first time this number made it into a  
21 quarterly report from Patriot, right?

22 A. Yes.

23 Q. Okay. And then, as I think you explained, that number  
24 has carried on until, in fact, the most recent report with  
25 accretion included as you move forward, right?

Schroeder - Direct

1 A. Correct.

2 Q. 13 percent discount rate, then, remained in effect  
3 throughout the period?

4 A. Yes.

5 Q. Do you think that that is a valid discount rate?

6 A. It's appropriate with purchase accounting that you keep  
7 the rate at 13 percent.

8 Q. And why is that?

9 A. Because that's the rate that was determined at the time  
10 the acquisition was recorded or the final purchase accounting  
11 was determined.

12 Q. And this is a June 30th, 2009 document, right?

13 A. Yes.

14 Q. Submitted in August of 2009, right?

15 A. August 7th of 2009.

16 Q. So it was actually completed in August.

17 A. Yes --

18 Q. It was actually completed --

19 A. -- filed in August of 2009.

20 Q. And then you go on to say, "Our estimated future payments  
21 for selenium remediation averaged \$12 million each year over  
22 the next five years." Do you see that?

23 A. I do.

24 Q. How is that calculated?

25 A. I don't recall.

Schroeder - Direct

1 Q. Do you believe now that that's a valid estimation?

2 A. I don't know of any reason to say that it's not, so yes.

3 Q. So you think that it's still reasonable to have assumed  
4 in August of 2009 that you would spend \$12 million each year  
5 for the next five years at all of Patriot operations for  
6 selenium.

7 A. The liability was determined based on a spending amount.  
8 The spending amount that is disclosed here is \$12 million on  
9 an annual basis over the next five years.

10 Q. Now, in the 10-K, Joint 32, that followed that 10-Q --  
11 what's a 10-K?

12 A. An annual report. There are requirements as to what to  
13 include in a document, but a 10-K is an annual report, as  
14 opposed to a 10-Q being a quarterly report.

15 Q. And now I'll turn your attention to page F37 of that  
16 document, which is, you know, roughly 75 percent of the way  
17 through the document.

18 A. I see that page.

19 Q. Do you see it?

20 A. Yes.

21 Q. It says, "We estimate the cost to treat our selenium  
22 discharge in excess of allowable limits at net present value  
23 of \$85.2 million as of the Magnum acquisition date." Do you  
24 see that?

25 A. I do.

Schroeder - Direct

1 Q. Now, you've changed from a gross estimation of liability  
2 to a present value estimation; is that right?

3 A. This shows the present value amount. I believe what we  
4 just talked about on the 10-Q, we had both the present value  
5 and the gross amount.

6 Q. Right. So previous to this report, you had been  
7 disclosing the liability in a gross amount, and now you've  
8 changed it to a present value amount; is that right?

9 A. I think this report also shows the gross amount, the same  
10 10-K.

11 Q. Okay. I'll take your word for it, but my question is, is  
12 the \$85.2 million present value the same as the \$390,719,000  
13 gross number from the Potesta report?

14 A. Yes, it is. And just to answer the previous, it does  
15 show on page F14 the 390.7 million. So, yes, to answer your  
16 question.

17 Q. Okay. So this Potesta number carried through not only to  
18 the 10-Q but also to your 10-K, right?

19 A. Yes.

20 Q. Okay. And your most recent 10-Q was filed on Friday; is  
21 that right?

22 A. Yes.

23 Q. This will be Plaintiff's 66. 66, the most recent 10-Q.  
24 Now, this was filed on Friday, right?

25 A. Our most recent was filed on Friday, August 6th.



Schroeder - Direct

1 Q. And does it carry over the same liability?

2 A. Yes, as adjusted for accretion and cash payments.

3 Q. Okay. Now, Mr. McHale testified here yesterday that he  
4 talked to you on Tuesday and Wednesday about the cost of a  
5 VSEP system being installed at Apogee; is that correct?

6 A. He and I were on a conference call with several other  
7 people this past week.

8 Q. Did you understand him to tell you that the cost would be  
9 between 40 and 46 million dollars for treatment at three  
10 outfalls?

11 A. One potential solution was to spend an amount of -- I  
12 believe the number was in the 40-million range, at three  
13 outfalls.

14 Q. And did you expect that that's what Patriot is going to  
15 do?

16 A. No.

17 Q. Why not?

18 A. I'm not sure what Patriot will do at this point.

19 Q. Do you think it's a reasonable possibility that Patriot  
20 will do that?

21 A. I really don't know.

22 Q. Did it raise concerns in your mind about the number that  
23 you're reporting in your annual reports if it costs  
24 \$40 million to treat three outfalls?

25 MR. GARDNER: Your Honor, I am going to object on

Schroeder - Direct

1 relevance. I fail to understand where this is going for the  
2 purpose of this hearing.

3 MR. LOVETT: Well --

4 MR. GARDNER: Now, this is not a securities case,  
5 there has never been a count in the claim, which has been  
6 based on the Clean Water Act and the Surface Mining Act. And  
7 Mr. Schroeder has indicated based on the events of the period  
8 Mr. Lovett has inquired about how they attempted to identify  
9 and represent the number that has been reported, but I fail to  
10 understand, given the purpose of this hearing, which is a  
11 contempt that Mr. Lovett is seeking against my client, and our  
12 motion to extend, what the relevance of this is. And I  
13 believe it's prejudicial, and I would ask that we --

14 THE COURT: All right. Mr. Lovett?

15 MR. LOVETT: It's not a securities case, Your Honor.  
16 There's no claim and we're not securities lawyers, but the  
17 fact is that these numbers significantly have underestimated  
18 on a systematic basis Patriot's liabilities. And that shows,  
19 in our estimation, that it never intended to comply with the  
20 consent decree in this case. It's estimating these kinds of  
21 liabilities since as far back as 2009 and has known what it  
22 was going to spend all long. It shows it was not serious  
23 about complying with the consent order entered in this case.

24 THE COURT: Well, I'm going to overrule the  
25 objection. I'm certainly not at this point concluding that

Schroeder - Direct

1 Mr. Lovett is correct in his assessment of the significance of  
2 this evidence, but I think the plaintiffs are entitled to  
3 adduce evidence to demonstrate the way Patriot characterized  
4 its liability in these SEC filings and the extent to which  
5 that characterization of liability was based upon the reports  
6 of Potesta and the other information generated by Patriot to  
7 reflect what they -- what Patriot knew or understood its  
8 treatment obligation to be. I think it's certainly admissible  
9 evidence, so I deny the objection.

10 MR. GARDNER: Thank you, Your Honor.

11 BY MR. LOVETT:

12 Q. Let's shift gears here, for a minute anyway, away from  
13 the reporting issues and talk about the most recent 10-Q, and  
14 let's turn to page -- fourth page, part one, item one,  
15 financial information. No, I'm sorry. It's the next page  
16 that I want. It is Patriot Coal Corporation condensed  
17 consolidated balance sheet. Do you see that?

18 A. Yes, I do.

19 Q. I'd like you to explain this to me, and I'll try to go  
20 through it with you. Under current assets, it lists cash and  
21 cash equivalent as \$239 million, \$239,000,182; is that right?

22 A. Yes.

23 Q. Is that money that you have in the bank right now?

24 A. As of June 30th, yes.

25 Q. As of January?

Schroeder - Direct

1 A. As of June 30th --

2 Q. June? Okay. June 30th.

3 A. -- 2010.

4 Q. So that money is in the bank.

5 A. Yes.

6 Q. And that money came from a bond sale that Patriot  
7 completed recently?

8 A. I think I indicated in my deposition we don't color our  
9 money, but certainly the proceeds from the bond deal would  
10 have been part of the reason that there is a cash balance as  
11 of June 30th.

12 Q. The bond deal was 250 million; is that right?

13 A. The gross amount was 250 million, that is correct.

14 Q. In any event, currently you have \$239 million in cash in  
15 the bank, right?

16 A. As of June 30th.

17 Q. And accounts receivable, \$198,915,000.

18 A. That is correct.

19 Q. And as I recall from your deposition, that's broken down  
20 into at least two parts; is that right? Maybe I'm  
21 misunderstanding. Is this the securitized accounts receivable  
22 money or is that somewhere else in the sheet?

23 A. No, it does not show in the balance sheet. This amount  
24 represents --

25 Q. I see.

Schroeder - Direct

1 A. -- accounts receivables from customers or others.

2 Q. So these are accounts receivable that are still owed to  
3 you.

4 A. As of June 30th were owed to us.

5 Q. Okay. So that's part of your assets, then.

6 A. Yes.

7 Q. And in addition to that, you have a securitized  
8 instrument of some sort available to you as well, right?

9 A. Yes.

10 Q. Would you explain that?

11 A. I will try to for you.

12 Q. Okay.

13 A. There is an instrument that allows you to take a portion  
14 of your trade receivables and sell them on a daily basis and  
15 monetize that amount.

16 Q. Right.

17 A. To the extent you use that instrument effectively, you  
18 would monetize some portion of this trade receivable balance.

19 Q. How much is that?

20 A. The facility is 125 million.

21 Q. So with that \$125 million, as I understand it, you would  
22 be able, for instance, to write a letter of credit to another  
23 entity; is that right?

24 A. Letters of credit are allowed under the accounts  
25 receivable securitization.

Schroeder - Direct

1 Q. So you have \$125 million in that securitized instrument,  
2 approximately, right?

3 A. The instrument is for 125 million. There is a sub-limit  
4 on it. I believe the number is 100 million as a sub-limit for  
5 letters of credit.

6 Q. What does that mean?

7 A. It means you cannot use the full amount for letters of  
8 credit.

9 Q. It's like my credit card where I have a cash advance  
10 number that's different from my credit limit?

11 A. Sure.

12 Q. Okay. So you could spend -- so you can go to -- you  
13 could write a letter of credit, then, to another entity today  
14 for \$100 million.

15 A. Available as of June 30th under the AR securitization  
16 program was up \$100 million of letters of credit, yes.

17 Q. And you don't have to get approval from anyone to do that  
18 at this point, right?

19 A. It is an existing agreement with two banks, so it is a  
20 ready commitment from those banks.

21 Q. And I think you testified also you have a line of credit  
22 available to you of -- I think at the time of your deposition  
23 it was 90-some million dollars; is that right?

24 A. Letter -- the revolving credit facility is  
25 \$427.5 million.

Schroeder - Direct

1 Q. And how do you arrive at the \$427 million number?

2 A. There's a syndication of 18 banks that have committed  
3 funds; and if you add up the commitment amount, it totals  
4 427.5 million.

5 Q. And is that a line of credit, in effect?

6 A. It is available for borrowings as well as for letters of  
7 credit and other items.

8 Q. So you could use that just as you could use the  
9 securitized instrument for a letter of credit, right?

10 A. Yes.

11 Q. Or you could actually get cash for it and pay that amount  
12 of cash for some purpose, right?

13 A. Yes.

14 Q. And do you need to get approval from those banks before  
15 you do that at this point, or have they already approved your  
16 use of the money?

17 A. They have committed to a dollar amount. So to the extent  
18 there is available funds, we could utilize up to the committed  
19 amount.

20 THE COURT: How much longer do you expect to go?

21 MR. LOVETT: Pardon?

22 THE COURT: How much longer do you expect --

23 MR. LOVETT: I could use a break, Your Honor.

24 THE COURT: How much longer do you think --

25 MR. LOVETT: How much longer?

1 THE COURT: -- your direct will take?

2 MR. LOVETT: Half hour.

3 THE COURT: Well, all right. We're going to go  
4 ahead and recess for the day, then, and come back at 9:00  
5 tomorrow morning.

6 Mr. Schroeder, I would direct don't discuss your  
7 testimony with your lawyers or anyone else, but as long as  
8 you're avoiding discussing your testimony, you can certainly  
9 be in the company of your attorneys or other people.

10 All right. You can step down.

11 MR. LOVETT: Thank you, Your Honor.

12 THE COURT: We'll stand in recess until 9:00 a.m.

13 (Proceedings adjourned at 5:09 p.m.)  
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16  
17  
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20

21 I, Teresa M. Ruffner, certify that the foregoing is a  
22 correct transcript from the record of proceedings in the  
23 above-entitled matter.

24 s/Teresa M. Ruffner

November 27, 2010

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